AMERICA'S LARGEST TEXTILE MONTHLY

COTTON

Entered as second-class matter at the postoffice, Dalton, Ga., under [illegible]

Volume 85
Number Seven
50 Cents per Copy.

MAY, 1921

Published monthly by
[illegible] C. Smith Publishing Co.,
Dalton and Atlanta, Ga.

"THE MOST IMPORTANT—

improvement in textile machinery in a decade," is one big textile man's opinion of Hyatt Roller Bearings.

> "Give careful consideration," he continues, "not only to the power saving these bearings make possible, but also the improved operation of the machinery and the decrease in maintenance and lubrication costs."

This man is right, there is no quicker, simpler, more dependable way to standardize production and to lower costs than to supply Hyatt Bearings to your textile machinery of all kinds.

If you are interested in modernizing your mill at low cost specify that your new equipment have Hyatt Roller Bearings and also investi[illegible] the possibility of applying them to your present m[illegible]ery.

Hyatt Roller Bearing Co., New York, N. Y.

PLANT ENGINEER

PRODUCTION MANAGER PRESIDENT CONSULTING ENGINEER

Dramatized Facts out of The Day's Work
No. 3

Where the facts came from

Similar to the incident related below is the heating of buildings covering 45 acres floor space for The White Company, manufacturers of motor cars and trucks. Equipment designed by Watson Engineering Company, Cleveland. Note trench for steam main in the foreground is ready to be filled in, burying the pipe forever.

What is a Courageous Idea *without a Courageous Doer?*

"There's the heat for the new plant," said the Consulting Engineer as he pointed to the swirling cloud of exhaust steam from a big forge works some 1200 feet away.

"But unfortunately it isn't here," laughed the Production Manager.

"And besides," chimed in the Plant Engineer, "we are blocked from getting it by these tracks, cranes aud storage yards."

"Real economies can't be stopped by little things like that," replied the Consulting Engineer. "We'll bring it in underground."

"A concrete tunnel would cost more than a new power plant," interposed the Plant Engineer.

"It can be laid in a trench with a special tile drain," answered the Consulting Engineer. "Grinnell Company has done it before. They will take the whole contract for the work."

The Plant Engineer still objected. He had visions of digging down on icy winter nights and Sundays to find leaky joints and putting in new gaskets.

"Don't worry," went on the Consulting Engineer. "Grinnell will weld the whole line. All you'll have to look out for is three expansion joints."

"What!" exclaimed the Plant Engineer. "They'll weld 1200 feet of 18-inch pipe on the job?"

"Just a moment," said the President quietly. "Let me understand. This is a new thing—this field welding. It's a courageous idea, I admit. But courageous ideas are cropping up all the time. Courageous ideas simply mean doing new stunts with other people's money. I can't take the chance—it isn't right to the company and my stockholders."

"Well, you don't have to take a chance," replied the Consulting Engineer. "These Grinnell people have the courage of their convictions and they'll back it with a guaranty—a guaranty that the job will do what we want it to do."

"Hm," reflected the President. "That's good enough for me—a guaranty of performance, eh? Tell them to go to it!"

GRINNELL GUARANTY

No Consulting Engineer or Architect could possibly maintain his own staff of experts on the thousand-and-one items he is expected to advise upon. He must have among his resources highly responsible firms that he can call on in special fields. We maintain a force of 1300 road men; more than half of them highly skilled. Engineers who know of this great national piping force have no hesitancy in calling on us for the unusual in industrial piping, especially when there is *a courageous guaranty behind ideas, men and materials.*

GRINNELL
INDUSTRIAL PIPING
Automatic Sprinkler Systems, Heating, Power and Process Piping
Your kind, their kind, every kind of Piping

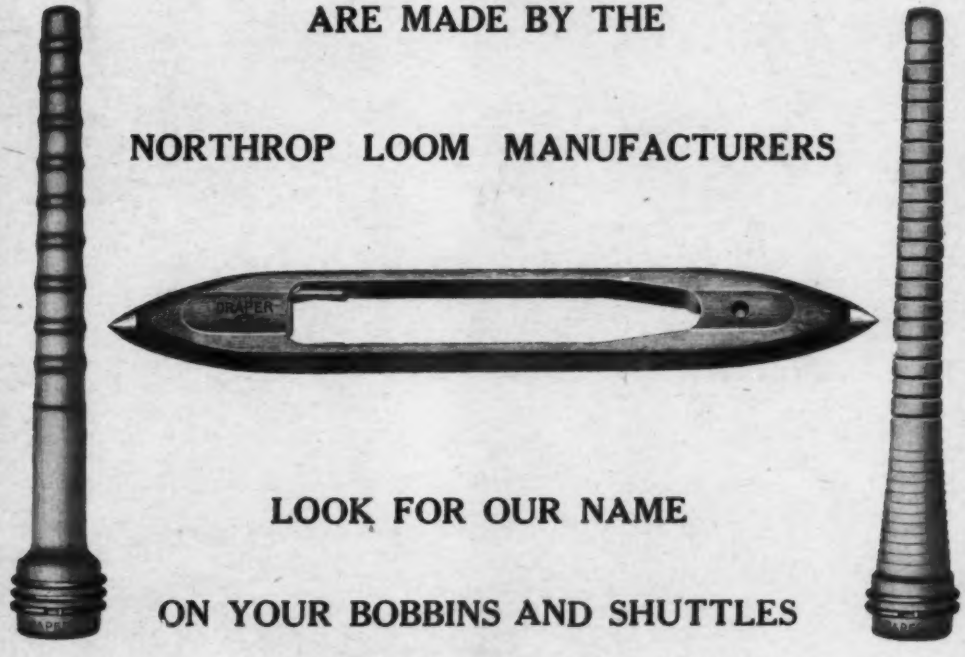
Send for booklets, "Five Factors in Heating Costs" and "Standardized Sizing." The latter tells how the efficient, simply operated Constant Level Size Circulating System increases production in weave mills and pays for itself in size saving, time saving and the elimination of the spots, hard and soft-sized warps, the most frequent cause of "seconds." Address Grinnell Co., Inc., Executive Office 266 West Exchange Street, Providence, R. I. **Fabricating Plants:** Charlotte, N. C., Providence, R. I., Atlanta, Ga., Warren, O.

THE BEST
NORTHROP LOOM
TRADE-MARK REG. U. S. PAT. OFF.

BOBBINS AND SHUTTLES

ARE MADE BY THE

NORTHROP LOOM MANUFACTURERS



LOOK FOR OUR NAME

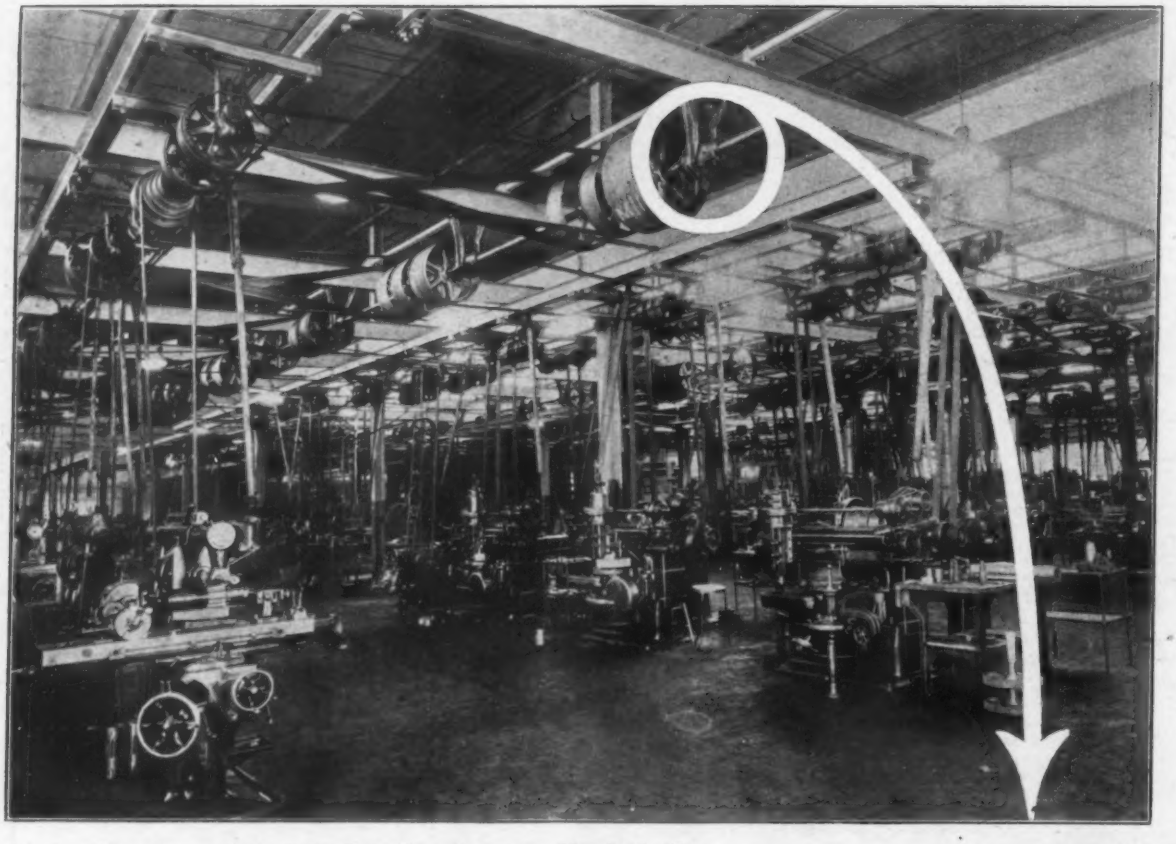
ON YOUR BOBBINS AND SHUTTLES

DRAPER CORPORATION
HOPEDALE MASSACHUSETTS

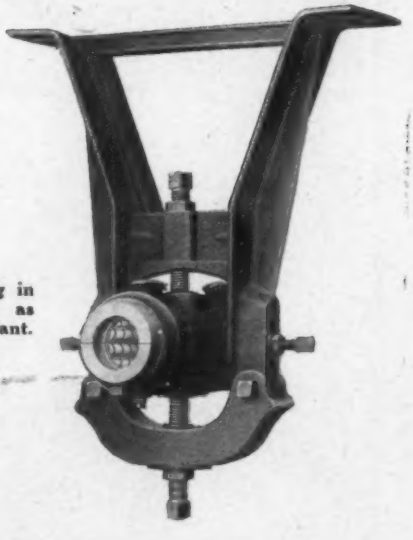
SOUTHERN OFFICE
188 SOUTH FORSYTH STREET ATLANTA GEORGIA

Copyright 1917 by Draper Corporation

New Foote-Burt Plant Entirely



Interior view of new plant of the Foote-Burt Company, Cleveland, Ohio, equipped throughout with Hyatt Roller Bearing Hangers.



Hyatt Line Shaft Roller Bearing in Pioneer Pressed Steel Frame as used throughout Foote-Burt plant.

HYATT BEARINGS

Equipped With Hyatt Bearings

Exterior view of the new Foote-Burt plant.

Mr. F. A. Barnes, Chief Engineer of the Foote-Burt Company, Cleveland, Ohio, says:

> "As a result of our experience with Hyatt Roller Bearings on the line shafting in our old plants, we have equipped our new plant with Hyatt Roller Bearings throughout (360 of them) - - - our longest shaft (about 125 ft.) is very easily turned by hand."

The action of the Foote-Burt Company in equipping this new seven-acre plant with Hyatt Roller Bearing Hangers is of important significance to you. From years of experience they know the economy and reliability of service afforded by this standardized transmission equipment.

The buildings and equipment in this new plant are of the most modern type and we are proud that Hyatt Roller Bearing Hangers will be on the job for years to come to help turn out Foote-Burt high grade machine tools on a minimum cost basis.

It will pay you to specify Hyatt Roller Bearings for **your** plant.

P.S.—Foote-Burt machine tools are also equipped with Hyatt Roller Bearings.

HYATT ROLLER BEARING COMPANY, New York, N. Y.

F-113

FOR LINE SHAFTS

Concealed Discontent that Reduces Your Profits

¶ You, like other textile executives, have installed playgrounds, gymnasiums, libraries, and other welfare equipment—have put in new machinery and equipment—WHAT FOR? Of course with the idea of increasing production and attracting and retaining operatives and making them more contented and productive.

¶ But has all this accomplished the end or brought the results that you wanted?

¶ The methods of the past are no longer of value—war-time high wages have been cut, and welfare work has not accomplished the results looked for.

¶ A reduction in wages that is not understood by the operative is destructive to his productiveness. He may take it in silence and pretend to sympathize, but there is a concealed unrest. The mind of each operative goes through a process of thought daily, that is seldom contributive to contentment and increased production. But he is human, and his petty jealousies and ideas that might seem selfish and bigoted and one-sided to you, are just misunderstandings—misunderstandings that you cannot remedy BECAUSE YOU DO NOT KNOW HIS MIND—misunderstandings that you will probably never know about under your present conditions—but they exist and are working toward discontentment and decreased production continually.

¶ Textile executives, superintendents, overseers, efficiency experts—all fuss and worry, guess and figure, simply because they do not understand why their operatives do not step-according-to-Hoyle and work hard. There's something more needed, and that is somewhat of a psychological need—you have to get under their skin, or in other words, get into the minds of the employees and know the why and wherefore of their thoughts, desires and actions. They must be reached on a man-to-man basis, and their prejudices eliminated. But the way to do it is the big question. There are plenty of impractical ideas, but an impractical plan carried out may do much more harm than good.

¶ There's only one right way, and that's where Sherman Service entered industry to stay.

SHERMAN SERVICE INC.

Production Engineering
Industrial Co-ordination

New York
2 Rector St.,
Cleveland
Park Building
Pittsburgh
401 Wood St.

Chicago
208 So. La Salle
Detroit
73 State St.

Philadelphia
1211 Chestnut St.
New Haven
42 Church St.
Kansas City
Reliance Bldg.

Boston
10 State St.
Providence
10 Weybosset St.

St. Louis
314 No. Broadway
Toronto
10 Adelaide St., East
Drummond Bldg.
Montreal

Largest organization of its kind in the world
Founded April 7, 1910.

SHERMAN SERVICE

The Service that Manufactures Energetic Loyalty

¶ Sherman Service grew from a little to a great big institution almost in spite of itself. Demands were made upon it which were hard to meet but gradually and phenomenally it accepted the responsibility placed and MADE GOOD.

¶ **We deal solely in viewpoints.** We get at the root of the trouble, into the minds of the operatives, study their thoughts and acts, find out why they think and do things contrary to contentment and production and change their viewpoint into proper channels for production purposes.

¶ It is through rubbing elbows, by word of mouth, by simple questions and answers at the right time and in the right place that accomplishes the necessary understanding—and it is with **human principles**, based on **human-motives** and followed up with **human-acts** that turns that understanding into prosperous production and contentment.

¶ Sherman Service may be called "production engineering—industrial co-ordination" but it is really the humanization of all the component parts of industrial relationship—it handles, deals in, corrects and constructs the human viewpoints of the employees. Its ways and means are understandable above board and mutually profitable. When you allow Sherman Service to enter your mill, you simply allow commonsense to reign supreme.

¶ If you carried out every plan you ever thought of or heard of, you would still lack the big experience and knowledge that we possess—knowledge gained through our experience with every phase of the question. For over ten years Sherman Service has not only been securing viewpoints and ideas, but in just the same manner has been correcting them. For every constructive word heard a constructive suggestion has been offered. Its experiences have been pooled, culled, studied and worked over and put into practice. We have a great group of human beings of every clime, type and vocation who have all gone through the Sherman School.

¶ We survey and analyze, counsel and advise. We sell you to your operatives, get their viewpoints, and get everybody on their toes, thinking right, doing right. Then the mill works well and profitably.

¶ All our experience, all our knowledge and activities can be swung directly into your plant among your own operatives. Let us tell you the rest confidentially. Write today.

SHERMAN SERVICE INC.

Production Engineering
Industrial Co-ordination

New York 2 Rector St.	Chicago 208 So. La Salle	Philadelphia 1211 Chestnut St.	Boston 10 State St.	St. Louis 314 No. Broadway
Cleveland Park Building	Detroit 73 State St.	New Haven 42 Church St.	Providence 10 Weybosset St.	Toronto 10 Adelaide St., East
Pittsburgh 401 Wood St.		Kansas City Reliance Bldg.		Montreal Drummond Bldg.

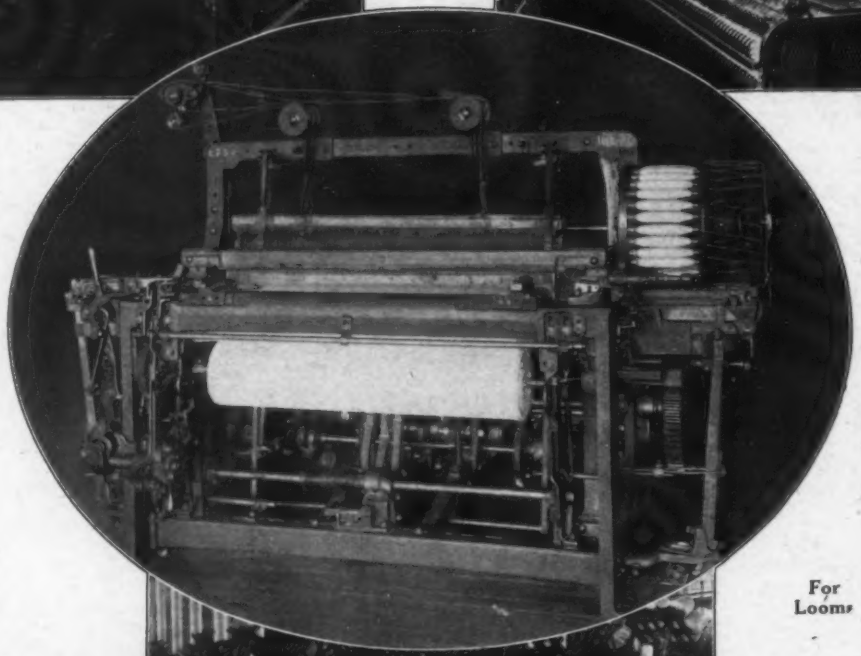
Largest organization of its kind in the world
Founded April 7, 1910.

SHERMAN SERVICE

An Important Improvement

For Cards

For Spinning Frames



For Looms

For Winders

HYATT BEARINGS FOR

In Textile Machinery

If you are about to order new textile machinery or are interested in increasing the working effectiveness of your present machinery it will pay you to give careful consideration to the use of Hyatt roller bearings.

They are being advantageously used on

Looms	Pickers
Cards	Warp Mercerizers
Winders	Nappers
Spinning Frames	Slashers
Twisters	Fulling Mills

There are special advantages of Hyatt Bearings for the various types of textile machinery but generally they are:

1. Power saving by elimination of rubbing friction; this also makes machines easy to turn over by hand.

2. Lubricant saving because of enclosed bearings which prevent loss of oil and oil stains.

3. Decreased maintenance costs because Hyatt bearings are sturdily built to give years of dependable service without replacement.

4. Better machinery because the use of Hyatt bearings necessitates more accurate machine work, more carefully built equipment.

The sooner you specify Hyatt roller bearings for your textile machines the sooner they will start saving money and stabilizing production for you.

1992

HYATT ROLLER BEARING COMPANY, NEW YORK, N. Y.

TEXTILE MACHINERY

Weaving Problems

Solved and Simplified Through the Use of

LOOMS
DOBBIES
JACQUARDS
WARP STOP MOTIONS

Built by

CROMPTON & KNOWLES LOOM WORKS

Worcester, Mass.

Providence, R. I. **Philadelphia, Penn.** **Paterson, N. J.**

Southern Representative: ALEXANDER & GARSED, CHARLOTTE, N. C.

Representatives for Great Britain:
HUTCHINSON, HOLLINGSWORTH & CO., LTD., DOBCROSS, ENGLAND.

Representatives for Continental Europe:
AMERICAN TEXTILE MACHINERY CORP. 47 AVE. DE L'OPERA, PARIS, FRANCE.

Representatives for China:
ANDERSON, MEYER & CO., LTD., SHANGHAI, CHINA.

Representatives for some South American Countries:
W. R. GRACE & CO., 7 HANOVER SQUARE, NEW YORK, N. Y.

48 Years' Success

1873 1921

Spinning Rings Twister Rings
Silk Rings Traveller Cleaners
Traveller Cups GuideWireSets

The Best That Experience Can Produce-That Money Can Buy

Whitinsville Spinning Ring Co.

Whitinsville, Mass.

The "Simplex" Knotter

$10.00

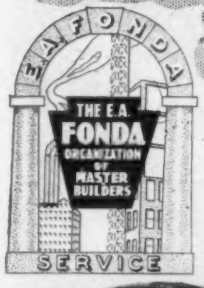
Low in Cost
but
Substantially Built

BARBER-COLMAN COMPANY

ROCKFORD, ILL., U. S. A.

BOSTON, MASS. GREENVILLE, S. C.

"--a more satisfactory building at several thousand dollars less cost."



The following letter is one of many in our files and is just an indication of the reputation which we have among all of our clients:

"Mr. Fonda made possible the erection of our $100,000.00 Apartment House by effecting our financial arrangements, assisting our architect in redesigning the structural plan and producing for us a more satisfactory building at several thousand dollars less cost. Through his knowledge of effecting purchasing and working organizations he made additional savings to our personal observation which amounted to many thousand dollars. We found Mr. Fonda entirely trustworthy, dependable and a man who knows his line of work.

Mr. Fonda has directed several very large construction operations for some of my personal friends who all speak highly of his energy and ability. During the past year his operations in this vicinity went well past the million dollar column."

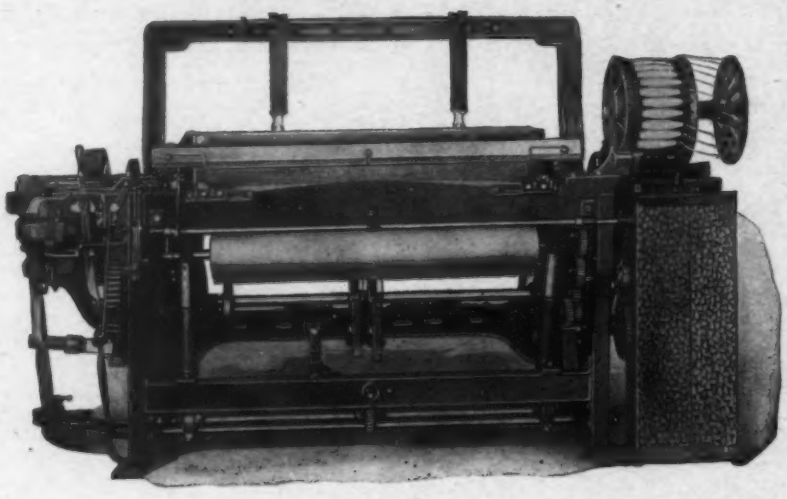
(Signed) D. L. MERIWETHER, Asheville, N. C.

Fonda Service is not an architectural service, nor is it merely a building service, but a construcitve service in which the whole heart and soul of the Fonda Organization is working—fighting to save you money and yet produce the most efficient and perfect construction that is humanly possible. And when the construction is turned over to you, you can feel sure that it could not be duplicated at a lower cost—and you will realize why "Master Builders" is a part of our name.

Full details of Fonda Service should be in your files for future reference. Estimates gladly furnished on any building or construction, no matter how large or how small. Write us today.

The E. A. FONDA ORGANIZATION of MASTER BUILDERS

GREENVILLE, S. C.
CHARLOTTE, N. C.



Mason Automatic Loom

With Battery, Warp Stop Motion, Feeler and Shuttle Lock

RANDOLPH CROMPTON'S PATENTS

Fewer Parts Standard Construction Rebounding Shuttles Overcome

Damage to Shuttles and Bobbins Prevented

WE ALSO BUILD
REVOLVING FLAT CARDS.
DRAWING FRAMES.
RING SPINNING FRAMES.
DUCK LOOMS in various widths and weights.
SILK LOOMS—Single Box and Two Box.
WIDE SHEETING LOOMS.

Mason Machine Works

Taunton, Mass.

E. HOWARD, Southern Agent
GREENVILLE, S. C.

LUNKENHEIMER
"Clip" Valves

"CLIP" Gate Valves are a distinctive LUNKENHEIMER product whose practicability, durability and economy have been demonstrated by many years of service in hundreds of thousands of installations.

The simplicity of the design; the wide range of sizes, and the material combinations in which "CLIP" Gate Valves can be had peculiarly fit them for standardization on lines carrying pressures up to 100 pounds.

Iron Body Bronze Mounted patterns are adapted for use in steam and water lines, while the "All-Iron" patterns have proved their superiority for handling fluids which attack Bronze.

The LUNKENHEIMER Distributor in your locality carries a complete stock for immediate delivery. By acquainting him with the operating conditions of your plant he will anticipate your requirements, preventing delay and possible shut-down when an emergency arises.

STANDARDIZE ON LUNKENHEIMER "CLIP" GATE VALVES.

THE LUNKENHEIMER CO.
"QUALITY"

LARGEST MANUFACTURERS OF
HIGH GRADE ENGINEERING SPECIALTIES
IN THE WORLD

NEW YORK CHICAGO CINCINNATI BOSTON LONDON

EXPORT DEPT. 139-135 LAFAYETTE ST., NEW YORK

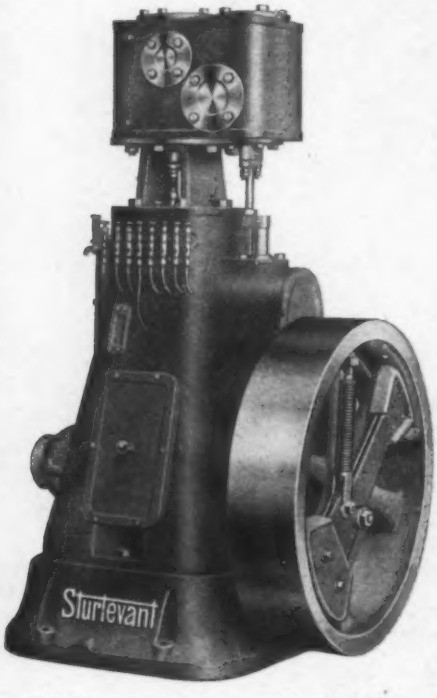
5-15 10

CURRENT EDITION OF CATALOG BEARS No 58 COPIES PROCURABLE FROM LUNKENHEIMER DISTRIBUTORS

BLANKETS T

Sturtevant Apparatus - Sturtevant Eng

(REG. U. S. PAT. OFF.)



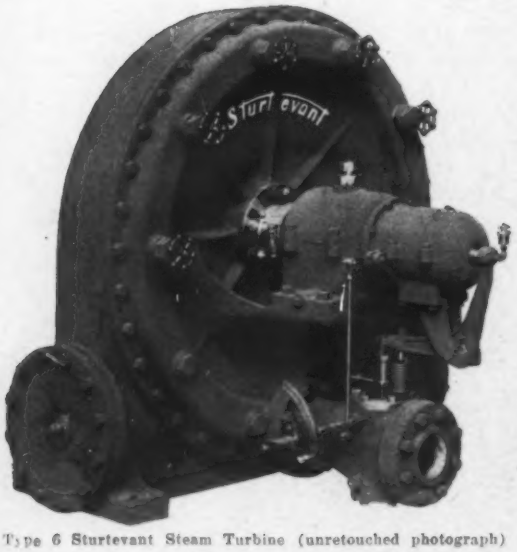
VS-7 Steam Engine showing sight oil feeders of gravity oiling system

Steam Engines

Designed to U. S. Navy specifications, the most exacting in the world. Unexcelled in reliability. Give stellar service under all conditions. Good steam economy and close speed regulations. Built either with gravity or with forced feed lubrication, as conditions require. Used for direct connection to blowers, fans, generators and for independent power service, automatic or throttling. Every engineer will be interested in the many distinct features of their design. Write for catalogue No. 239.

Steam Turbines

Particularly adapted to driving Sturtevant Fans and Blowers, pumps, generators and other auxiliaries with the minimum in steam consumption, attention and repairs. Built with solid rotors with individually controlled nozzles having internal reverse buckets to insure the most efficient absorption of the steam velocity. Unsurpassed in close speed regulation and in protection against over-speed. Ask for our new catalogue No. 256.



Type 6 Sturtevant Steam Turbine (unretouched photograph)

Generating Sets

Whether steam turbine, steam engine or gasoline engine driven, Sturtevant electric generating sets comprise every qualification to render the maximum of efficient service. Unsurpassed in operating economy by any units in their class. Write for bulletins.

Wherever You

Sturt

REG. U. S.

the high quality of the product is assured. It symbolizes the best engineering practice in design and construction of Fans, Blowers, Turbines, Engines, Economizers and other power apparatus that has been the outcome of over 60 years' experience.

To assist prospective purchasers 22 Sturtevant Engineering service stations are

LIST OF

Blowers and Exhausters
134-Steel Pressure Blowers
242-Monogram Blowers and Exhausters
228-Multivane Fans, Design 3
238-Multivane Fans, Design 3 Performance Charts
237-Ready-to-run Ventilating Sets
257-Positive Pressure Blowers

Forced Draft Apparatus
236-Forced Draft Fans
224-Turbo Undergrate blower design 3

Fuel Economizers
150-Sturtevant Fuel Economizers

Engines
239-Vertical Single Cylinder VS 7 and VS 8

Generating Sets
239-With VS 7 and VS 8 Engines
255-Gasoline Elec., Gen. Sets

B. F. STURTEVA

Hyde Park, Boston, Mass.

HE COUNTRY

neering Service - Sturtevant Systems

(REG. U. S. PAT. OFF.)

See the Name

evant

PAT. OFF.

maintained in the leading business centers of the country. A staff of Sturtevant engineers is ready to serve you promptly. Their advice is worth money—and costs you nothing.

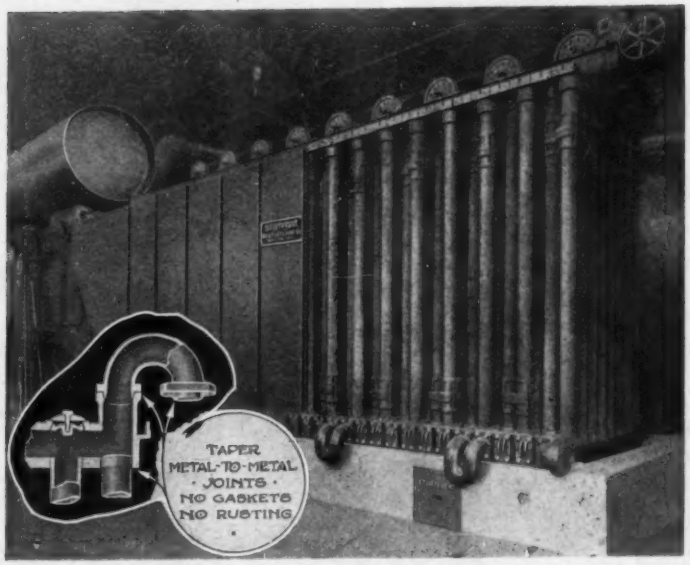
Better get acquainted with the Sturtevant line. Send for any of the catalogues listed below.

BULLETINS

eating and **Ventilating**
0-Heaters
7-Heating and Ventilating Layouts, Blue-Print Book
11-Heating and Ventilating Factories
13-Heating and Ventilating Public Buildings
14-Heating and Ventilating Govt. Bldgs.
15-Heating and Ventilating Book Complete
5-Heating and Ventilating Treatise
orges 1050-Forges
lotors and **Generators**
7-D-G. Type D. Commutating Poles
acuum **Cleaners**
4-Stationary Vacuum Cleaners
24-Portable Vacuum Cleaners
eam **Turbines**
6-Steam Turbines
iscellaneous
5-General Catalogue
3-Power Apparatus
6-Air Washers Type S
No. 25-Canadian Edition

NT Company

ranches in All Principal Cities



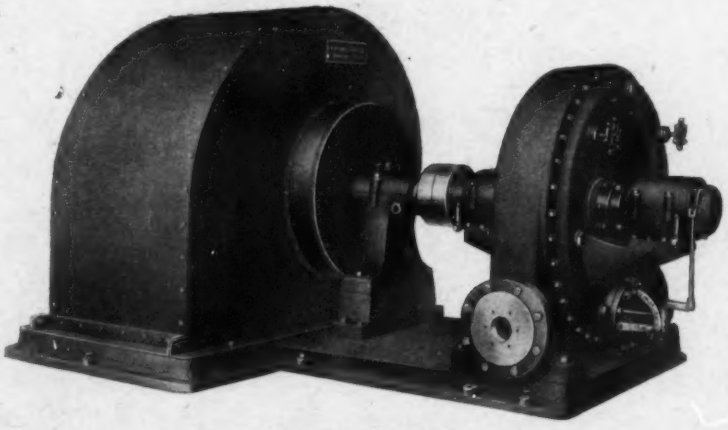
Sturtevant Economizer installation. The metal-to-metal joints eliminate all use of gaskets, packing and rusting; staggard pipe construction insures high feedwater temperature

Fuel Economizers

At a lower operating and repair cost the highest feed water temperature is assured. Large fuel savings effected. Boiler life prolonged—capacity increased. Smoke nuisance relieved. Two supreme Sturtevant features are the staggard pipe construction and the tapered metal-to-metal joints (see the illustration) which eliminates use of all gaskets, packing and rusting. Withstand 300 lb. pressure. Request catalogue No. 150.

Mechanical Draft

The supremacy of Sturtevant induced and forced mechanical draft apparatus-engine, turbine or belt driven—embrace the refinement and perfection derived from 60 years of "knowing how" in the construction, as world leaders, of fans, fan systems and related products.



Turbo-Driven Forced Draft Fan

Howard Bros. Mfg. Co.

Established 1866

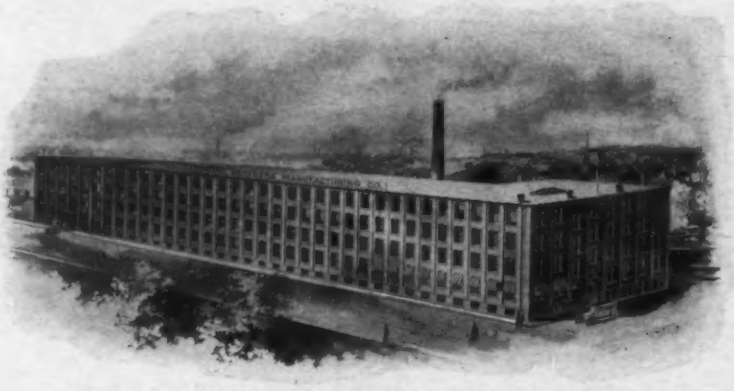
WORCESTER, MASS.

ATLANTA, GA.
Agent
E. M. TERRYBERRY
1126 Healey Bldg.

PHILADELPHIA, PA.
Agent
JOSEPH A. BOLGER,
4925 Royal St.
Germantown.

CARD CLOTHING

Napper Clothing
Heddles for any loom



Card clothing for cotton, woolen and worsted cards.

Cylinder Fillets — Doffer Fillets

Top Flats Reclothed — Stripper Fillets

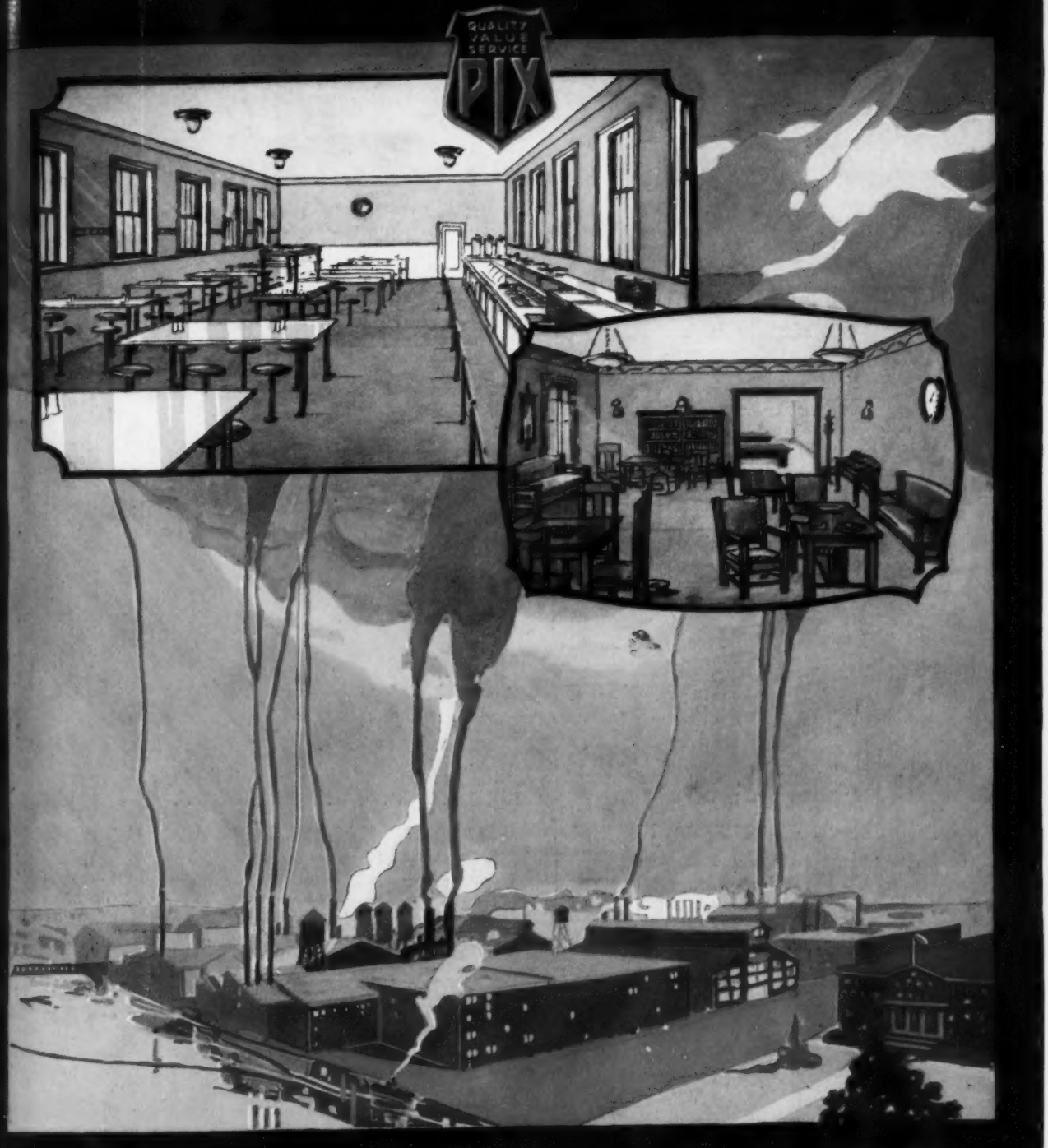
Burnisher Fillets

Napper Clothing for All Styles of Machine and Cloth

Midgley's Improved Hand Stripping Cards, All Lengths and Sizes

---

QUALITY AND SERVICE ALWAYS GUARANTEED



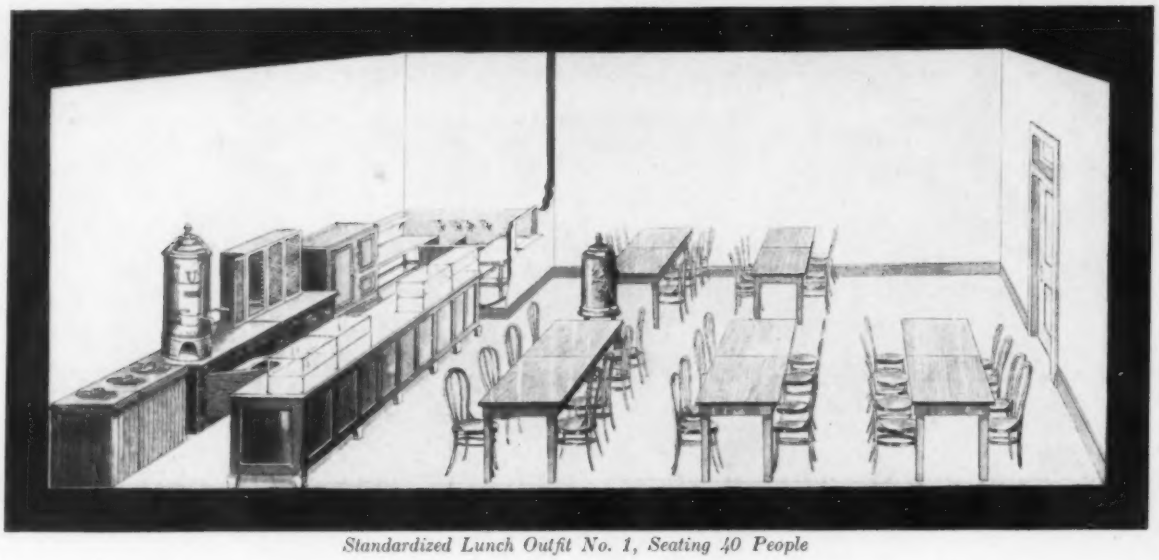
INDUSTRIAL LUNCH ROOMS
REST ROOMS, INDUSTRIAL CLUBS
INSTALLED COMPLETE

ALBERT PICK & COMPANY

208-224 WEST RANDOLPH ST. CHICAGO

nformation
lied Promptly

Shall We Send
Our Representative?



Standardized Lunch Outfit No. 1, Seating 40 People

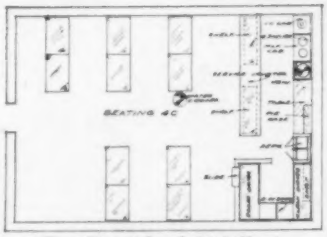
Is the Industrial Lunch Room Practical Only for Giant Plants?

No! No matter how many or how few employes a concern may have, a lunch room can be arranged at no greater proportionate cost than that of a giant factory. The smaller the concern, the more vital is the employment problem and the greater the benefit from a properly managed lunch room. ∴ ∴ ∴ ∴

EQUIPMENT NEED NOT BE EXPENSIVE

With a small investment you can install a practical lunch room that will feed your force as economically as the elaborate installations feed thousands. Our plans for simple and inexpensive lunch outfits, feeding as few as 25 people, show how inexpensively the matter can be handled. In no case is an extensive investment required, nor a large amount of space necessary.

Let us advise with you. Tell us the number of employes to be served, the type of service (whether for complete or partial lunches) and enclose a floor plan of the space available. We will immediately send you—without obligating you in any way—complete specifications, descriptions and prices. The organization which produced the largest cafeteria in the world is at your service.



Floor Plan of Lunch Outfit No. 1

OUR STANDARDIZED LUNCH OUTFITS

We have standardized lunch outfits of various sizes and types to fit the needs of concerns of every size. We have considered in turn the problems of providing lunch service for as few as 25 and as many as 500 people. These outfits will meet ***your needs.***

Outfit No. 1, shown here, serves partial lunches and is the simplest equipment possible, designed for those wishing to try out lunch service with the very smallest investment. It has a seating capacity of 40 people, with a feeding capacity of about 100 people per hour. Floor space required is 700 square feet. All these rooms are shown in "The Employe Betterment Book", No. S61, with pictures, floor plans and specifications. This book also contains complete information, pictures and data concerning every type of industrial lunch room, together with a comprehensive treatise on industrial clubs and other welfare projects. **In asking for this book, kindly mention No. S61.**

ALBERT PICK & COMPANY

208-224 WEST RANDOLPH ST., CHICAGO, ILLINOIS

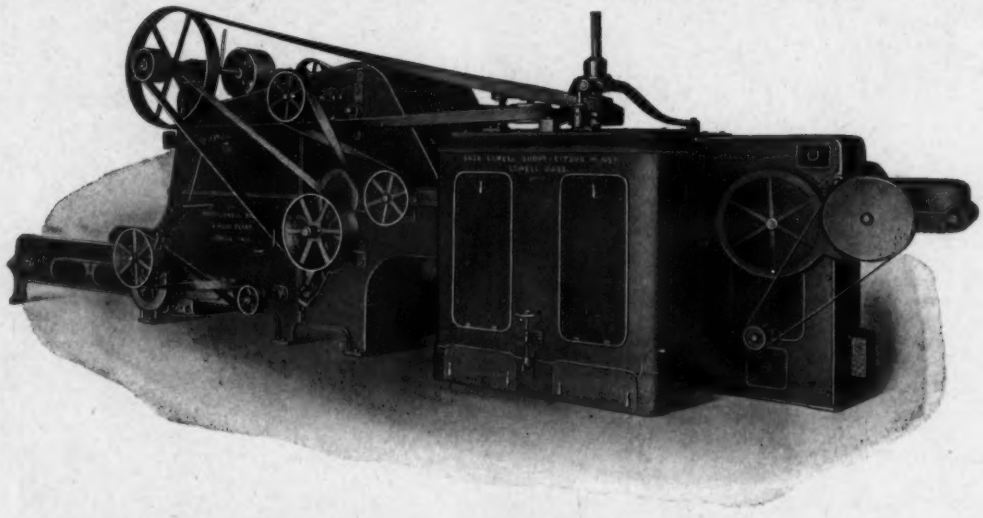
General Catalog of Furnishings, Equipment and Supplies for Public Service, listing Chinaware, Glassware, Silverware, Linens, and a complete line of necessities for plant lunch rooms, also Janitor's Supplies, Furniture, Floor Coverings, etc., manufactured expressly for public service.

WRITE TODAY FOR CATALOG S23.

SACO-LOWELL SHOPS
Cotton Machinery

INCLUDING

OPENING, CONVEYING AND DISTRIBUTING EQUIPMENT



VERTICAL OPENER COMBINATION

PICKING ROVING WARPING
CARDING SPINNING SLASHING
DRAWING SPOOLING TWISTING

Waste Reclaiming Machinery

Saco-Lowell Card Stripper

SHOPS AT

LOWELL, MASS. BIDDEFORD, ME.
NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES:
BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, Charlotte, N. C.
Southern Branch Office, Greenville, S. C.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

Specialists in machinery for various kinds of WASTES. Builders of Carding and Spinning Machinery for Wool, Asbestos, Cotton-waste and other yarns spun on the wool principle.

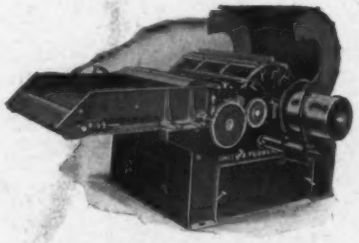
Garnetts and Shoddy Machinery. Batt or Felting Machinery, Machinery for wiping and car-box waste.

Complete equipments for Rewoven Gunny.

Cotton Waste Card

Ask for Circular S-165

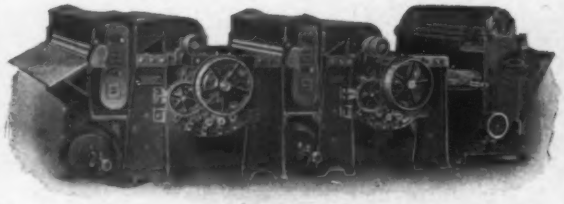
This is one of the carding units in a plant for making mop, cordage or other yarns from cotton waste.



Jute Picker

Circular S-166

This machine is used for opening Gunny and Burlap, forming a part of our equipment for the manufacture of Rewoven Gunny Bagging.

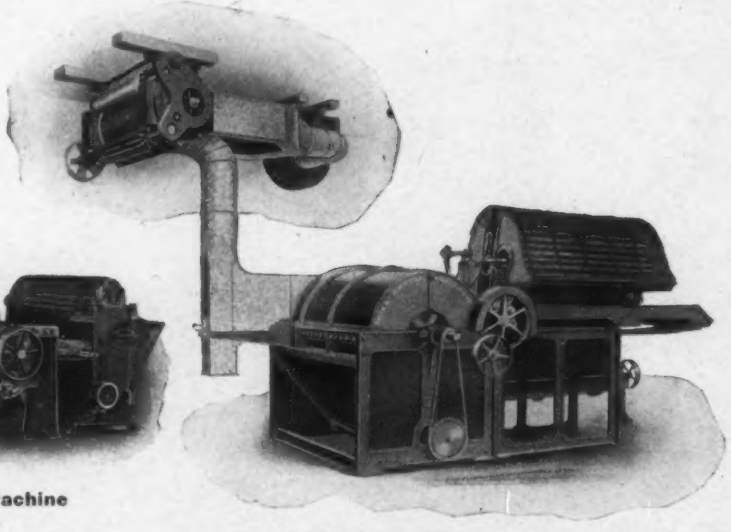


Cotton Waste Reclaiming Machine

(Shaughnessy Patent)

Ask for Circular S-90

The Shaughnessy Reclaimer does work not done by any other machine in recovering spinning fiber from low grade Cotton Wastes.



Continuous Outfit for Cotton Waste

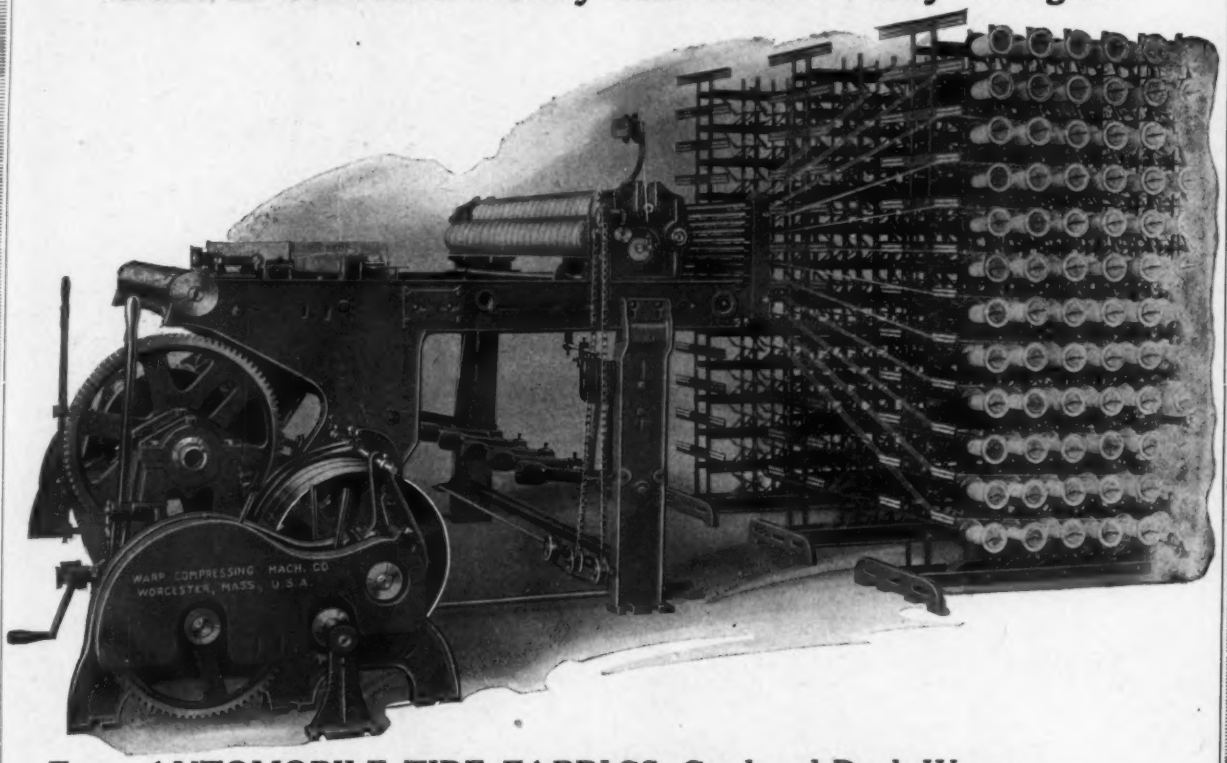
Ask for Circular S-185

Our continuous outfit removes the loose dirt, dust and bits of iron, wood, etc., from low grade Cotton Waste.

DIRECT BEAMING OUTFITS

FOR PLIED YARNS

Built in Standard Heavy and Extra-Heavy Weights



For:—AUTOMOBILE TIRE FABRICS: Cord and Duck Warps. DUCKS: SAIL-CLOTH: CAMEL'S HAIR PRESS CLOTH: WOVEN BELTING: STITCHED BELTING: CONVEYOR BELTING: ASBESTOS Brake-Band and Clutch Lining, etc.

Beaming directly from your twister spools or cheese packages. UNIFORM TENSIONS

30 to 50 per cent. more yarn per loom beam

ALSO

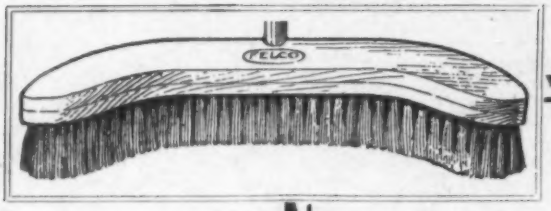
DIRECT WEAVING OUTFITS FOR CORD FABRIC

COTTON MACHINERY	WOOLEN MACHINERY	WORSTED MACHINERY
Direct Beaming Outfits	Warp Compressors	Warp Compressors
Dry Slasher Outfits	Wool Beamers	Duplex Beamers
Chain Beaming Outfits	Dry Dressing Outfits	Royal Worsted Spoolers
Warper Creels	Compressing Spoolers	Multiple Spoolers

WARPER CREELS for carpet jute
BEAMING HEADS and WARP COMPRESSORS for jute slashers
HIGHEST EFFICIENCY TEST IN YOUR GOODS. Production plus QUALITY.

Representative: F. W. KIESSLING, *Worcester, Mass.*

WARP COMPRESSING MACHINE CO., Worcester, Mass. U. S. A.



Industrial Preparation

means for one thing, finding the weak spots in factory, mill or warehouse operation.

BRUSHES

FELCO

BRUSHES

One of your weak spots may be, too much lost time, because of not using the proper BRUSHES in your Weaving and Spinning rooms. This means loss of productive time and general plant inefficiency.

Prepare for the rush that will surely come within the next few months. Provide your operatives with the proper BRUSHES. They will pay for their own cost and a substantial profit on the investment.

OUR CATALOG WILL
LIGHT THE WAY.
HAVE YOU ONE?

ATLANTA BRUSH CO.

Successors to D. D. Felton Brush Co.

Central & Trinity Aves. **ATLANTA, GA.**

Your TOP FLAT BRUSHES

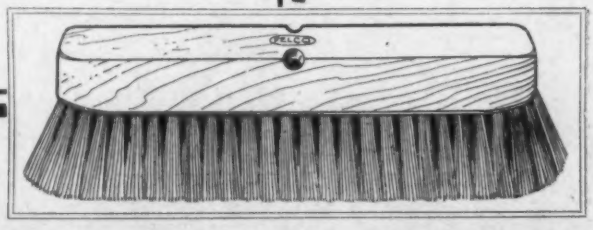
Should be refilled. Our Repair Department has been greatly enlarged. We can do your REPAIR WORK on the shortest possible notice, guaranteeing satisfaction.

Estimates gladly furnished.

Garvey Stencil and Marking Ink

Comes ready for use. A non-evaporating MARKING INK which is impossible to rub off.

We are Sole Distributors.



STAFFORD

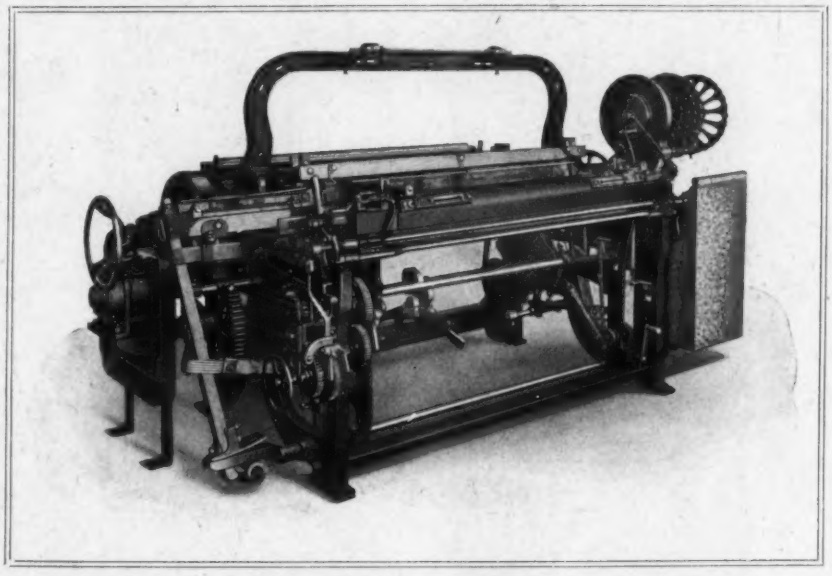


Illustration shows Stafford Bobbin-Changing loom equipped with high take-up roll. The same loom is built with Stafford style medium take-up.

The Stafford company manufactures a complete line of automatic looms, either *shuttle* or *bobbin changing*, for weaving practically every type of cotton fabric that can be made with one shuttle.

Stafford looms will handle cop filling just as successfully as bobbin filling. We have a loom for every kind of yarn, coarse or fine, and for practically every variety of fabric either plain or fancy.

Stafford looms possess advantages which should appeal to every mill man interested in the development of automatic weaving machinery.

For complete details address our nearest office.

THE STAFFORD COMPANY
READVILLE, MASSACHUSETTS, U. S. A.

SOUTHERN AGENT
J. H. MAYES
CHARLOTTE, N. C.

BRITISH REPRESENTATIVE
F. W. MEREDITH
59 PICCADILLY—MANCHESTER

SILK HEADQUARTERS
COLT BLDG.
PATERSON, N. J.

A Special Type of Nordray Automatic Loom, Built to Suit a Customer

Which simply illustrates the fact that we run our shops to serve.

We could have told him to take our regular model or go to someone else. We could have insisted on using standard parts. We could but we did not.

HOPEDALE MANUFACTURING COMPANY

MILFORD, MASSACHUSETTS

JONAS NORTHROP C. H. & G. O. DRAPER F. E. NORCROSS

LIVING UP TO OUR REPUTATION

IN 1888 we manufactured our first humidifying systems. During succeeding years, we have turned out a vast number adapted to practically every industry where air-moistening devices are employed, throughout the United States and many foreign countries.

It has been our purpose never to experiment on the purchaser of one of our systems, but to conduct conclusive tests in our own factory with each type of apparatus before a single one is sold.

It is easy to understand then how we have established an unrivalled reputation for the efficiency of AMERICAN HUMIDIFYING SYSTEMS—**and this reputation is worth dollars and cents to purchasers.**

Added to our own efficient organization, we are pleased to announce the close cooperation of the GRINNELL CO., Inc., well-known manufacturers of automatic sprinkler systems, piping, valves, etc., who are recognized national authorities in this field.

The combined services of the engineering staffs of both organizations are at your disposal for consultation with regard either to the installation of new equipment or bringing old or antiquated systems up to the highest possible efficiency.

AMERICAN MOISTENING COMPANY

BOSTON, MASS. **ATLANTA, GA.**

Factory Representatives:

W. R. GRACE & CO., New York
South America

ANDERSEN, MEYER & CO.,
Shanghai, China

W. J. WESTAWAY & CO.,
Hamilton, Canada

WHITIN MACHINE WORKS

ESTABLISHED 1831.

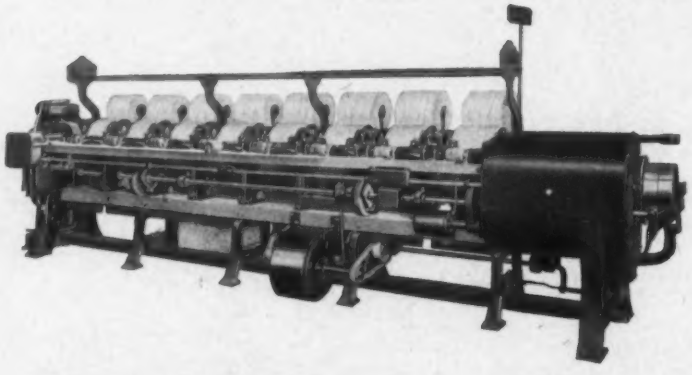
TEXTILE MACHINERY

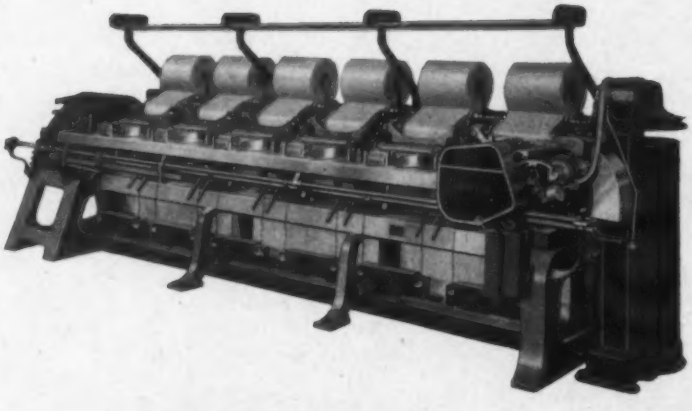
Makers of

COTTON COMBING MACHINES

Meeting all requirements of Textile Manufacturers

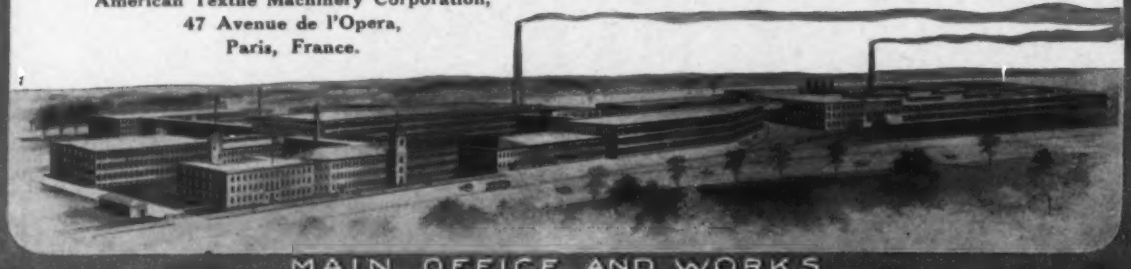
Model D-2 Comber
Whitin Type





Model E. Comber
Nasmith Type

European Agent:
American Textile Machinery Corporation,
47 Avenue de l'Opera,
Paris, France.



MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE, N.C.

Immediate Delivery!

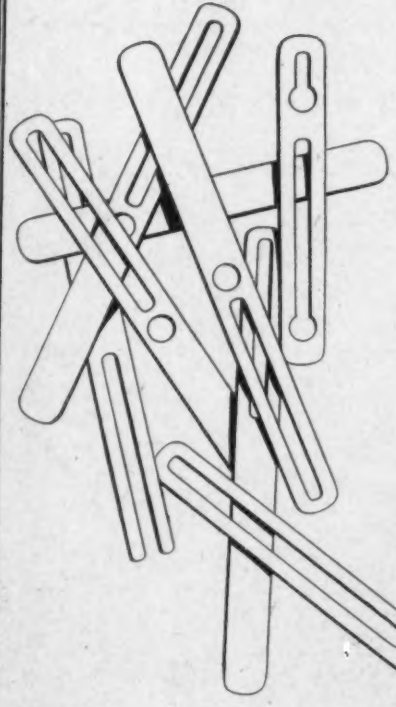
GREIST

LOOM DROP WIRES

Are made of a special grade heddle wire. They are uniformly finished, accurate in design, free from burrs. A comparative test will readily convince you that they are superior to any drop wires on the market.

Because of our large manufacturing facilities we are able to fill orders of any size immediately. In addition to our many standard designs, we are prepared to make drop wires in any quantity from your own specifications.

Since 1871 the Greist Manufacturing Company has been the world's largest maker of sewing machine attachments, and is a dependable source of supply for you to rely upon for drop wires.



The Greist Manufacturing Company, Dept. C, New Haven, Conn.

New England Representative:

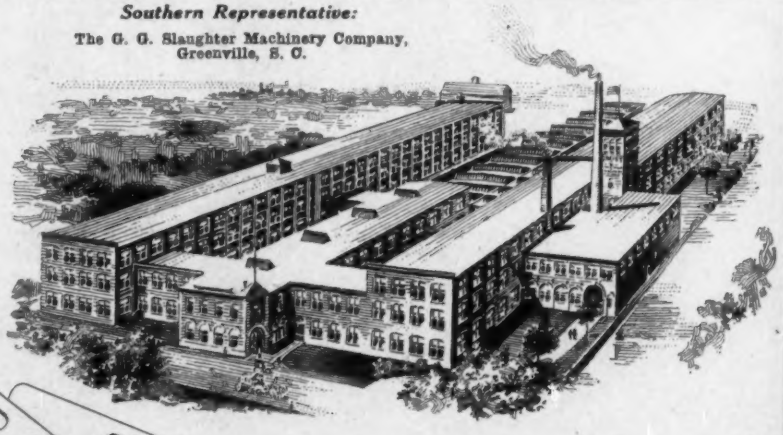
Boyd's Textile Bureau, F. W. Boyd, Manager,
339 Butler Exchange, Providence, R. I.

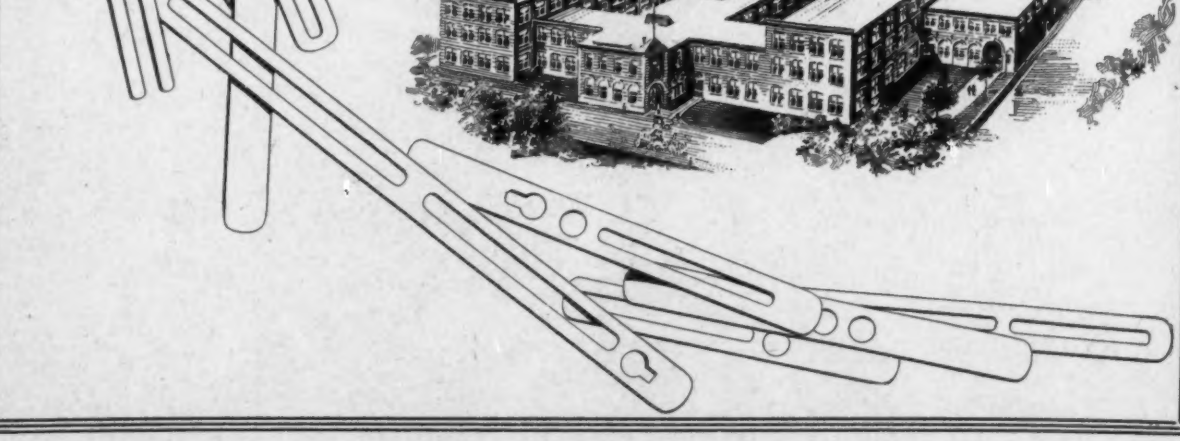
Fall River and New Bedford:

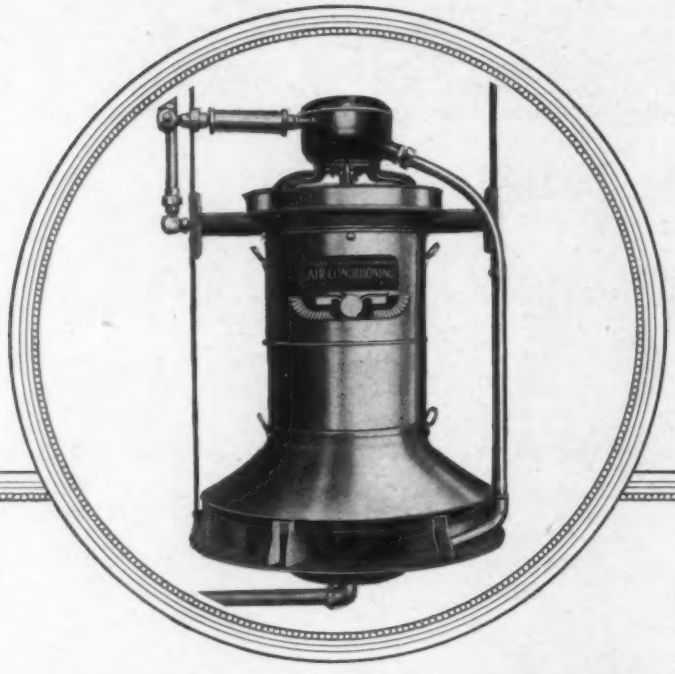
Coldwell Gildard Company,
108 Hartwell St., Fall River, Mass.

Southern Representative:

The G. G. Slaughter Machinery Company,
Greenville, S. C.







Something New in High Duty Humidifiers

You thought Parks-Cramer High Duty, the standard for years, had reached its fullest development.

But here's an improvement. Parks-Cramer engineers are always on the hunt for improvements.

The Water Motor Air Conditioner

Same general appearance as the familiar High-Duty—only water driven instead of electric. Same capacity, same power cost, same amount of air circulated.

But Better—Because

Water motor is more simple than electric.

No wiring, no electrical troubles.

All power applied at one place—the pump—instead of in a large number of small units.

It will evaporate more water per invested dollar than any humidifier that we have yet developed.

Profit by High Duty Climate

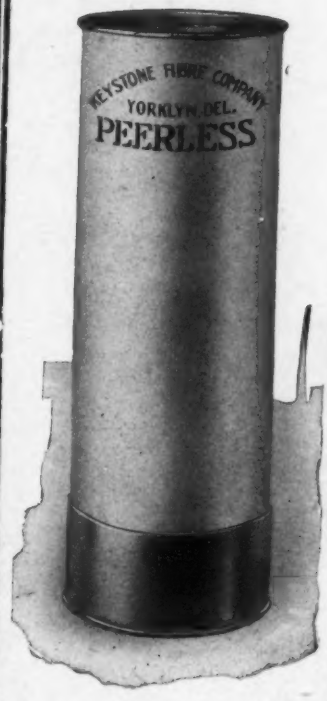
Parks-Cramer Company

Engineers & Contractors

Industrial Piping and Air Conditioning

Fitchburg Boston Charlotte

Their specially reinforced kick-proof bottom is one of the many reasons why



KEYSTONE "PEERLESS" SEAMLESS ROVING CANS

outwear all others and stand any amount of punishment without losing their unequalled smoothness or appearance.

"Peerless" cans are the lightest and most easily handled.

Send for our booklet showing full line of strong, light Keystone Holloware for mills.

Orders filled through any responsible mill supply house, or direct.

Keystone Fibre Company

Box 245 Yorklyn, Delaware

Southern Representatives: Wilson Company, 408-409 News Bldg., Greenville, S. C.
Mark C. Morrison, 59 Pound Bldg., Chattanooga, Tenn
Philadelphia Office: 21 N.
Boston Office: 136 Federal Street

Picker Sticks

that last

You want your production to be interrupted as little as possible, and you want the number of seconds held down to a minimum. These two things can be helped along by using Picker Sticks that last longer.

Quality: The wearing qualities of our sticks are undisputed. They're all made from close-textured, straight-grained Southern Hickory, which has been properly sawn, seasoned and handled.

Finish: A nice smooth finish on every stick is assured by proper sanding. Loom fixers and boss weavers like our sticks because they are so nice to handle.

Crating: The crating of sticks for shipment is important, because some of them are going to warp and become worthless unless the crating is properly done. We crate ours right.

Samples: Send us a sample stick or a drawing, and we will make up a generous supply of free samples for you. Our samples are sent with transportation charges prepaid.

Prices: Even though good hickory is scarce and expensive, we have recently reduced our prices, which will be quoted on receipt of sample stick. Write us before ordering.

Deliveries: Being in shape to turn out, when necessary, two or three thousand sticks a day, we can promise, and live up to, most any delivery you want.

Guarantee: Our guarantee protects you from having to pay for any bad sticks. Our sticks are right, and we absolutely guarantee them to be so.

Southern Bending Company

Johnson City, Tennessee, U. S. A.

The Cloth Regain Process That Insures Maximum Profits from your Products

EVERY textile manufacturer knows that from 8% to 15% of the normal weight of their product is due to the atmospheric content, and realizes the importance of restoring the cloth to its maximum atmospheric condition, in order to regain weight and dimension and improve the handle and appearance.

The spraying method of regain has never proved satisfactory. Room humidification is insufficient, especially when cloth is rolled or piled.

The regain process that insures perfect results and maximum profits from your products is to be found in the

Manufacturers Cooling and Conditioning Machine

This is a patented process, based on the operation of natural laws and its efficiency has been proven in many mills.

There is no possibility of the product treated taking on more than the normal content, the degree of humidity in the machine being always under 100%.

In addition to the gain in weight, there is a permanent gain in dimension. Static electricity is removed. Variations in color are often caused by variation in cooling time, a quick oxidation generally giving a darker shade than slow oxidation. Consequently cloth allowed to cool in the roll often shows darker on the edges than inside. Treating the goods by our process entirely obviates this. Goods to be calendered should be cool and in normal condition to give the best results. This process cools rapidly and uniformly and will not disturb or change the most delicate finishes.

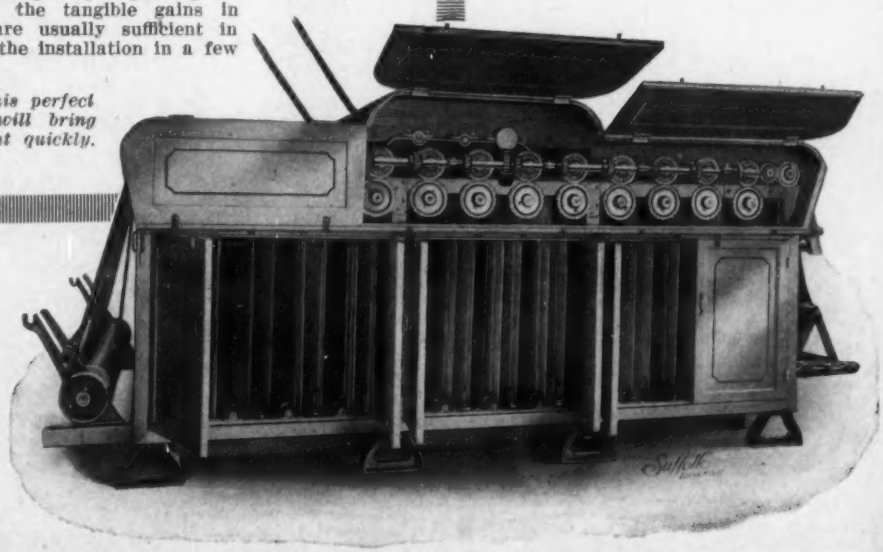
This patented process should be a part of the equipment of every mill. In addition to greatly improving the appearance and handle, the tangible gains in weight and dimension are usually sufficient in money value to pay for the installation in a few weeks' operation.

Let us tell you about this perfect process. Your request will bring the information you want quickly.

—increases weight and dimension to the maximum

—assures perfect and uniform finish and color

—eliminates static electricity thus improving handle.



Manufacturers Machine Company

Sales Department

120 Milk Street,

Boston, Mass.

Factory:

North Andover, Mass.

AMERICAN
DYEWOOD COMPANY

Full Lines
of

Direct Colors **Sulphur Colors**

Developed Colors

Mutual Colors

Cutch Bark **Fustic Logwood**

A Service for Cotton Dyers

Dyeing problems, if presented to our experts are solved entirely from your point of view. We aim to suggest methods by which you may secure just the shades you seek using dyestuffs suited to your particular requirements at the lowest cost to you.

This service is free.

Ask for our specialties in

Fast to light direct colors

AMERICAN DYEWOOD COMPANY
NEW YORK · BOSTON · PHILADELPHIA · HAMILTON, ONT.
Works at CHESTER, PA.

SPECIALISTS IN MARKING MACHINES

Carton Marker.

The Carton Marker is for printing the size, descriptive names or colors, style numbers, or lot numbers, on the carton or the label, giving an absolute uniform result on all your containers; eliminating the poor and blurry mark that is usually obtained by the use of hand stamps.

Over 500 of these equipments are in operation.

Is adapted for marking the set-up, folding or telescopic carton.

Price of standard equipment, $300.

Textile Marker.

The standard Textile Marker, designated as an M-5 equipment, is for placing identification marks on pieces before going into the dye, bleach and finish, or any other operation in which the material requires marks for identification purposes, eliminating any possibility of error or short measure. Gives you a true check on your yardage. Price for standard equipment $300.

Coupon Marker.

The Coupon Marker, used in connection with piecework pay-roll systems, where the coupon method is operated. Prints at the rate of 375 a minute. Has rotating type wheels which enable the operator to set various numbers at will, and is the solution for marking where this system is installed. There are over 400 of these in use.
Price of standard equipment, $250.

MARKEM MACHINE CO.

232 Summer St., BOSTON, MASS.

FIG.20.

Heavy duck. Renewable Hardwood Shoes. Leather-bound rim.

FIG.27

Smooth Surfaces. Light handling. Thread-guard Casters. Great durability.

Today
Profits are measured
by
Economies Practiced.

LANE CANVAS BASKETS

Point the way to

Ultimate Reduction of Operating Costs

Standard
American
Equipment

FIG 50

A long-lived Doff Truck embodying Lane principles throughout.

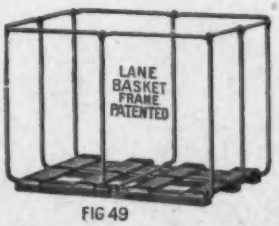
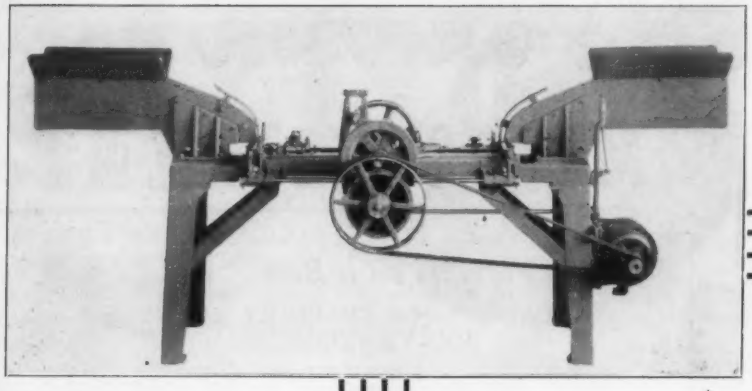


FIG 49

This frame is highest grade Spring Steel, the Lane Eye-joints allowing flexibility in every part and preventing breaking or bending.

W. T. LANE & BROTHERS, Manufacturers, **POUGHKEEPSIE, N. Y.**



BE PREPARED

FOR THE BIG DEMAND THAT IS COMING

The "Do It Now" Textile Manufacturer is not only selecting, but buying his equipment now in anticipation of the stampede in business when it opens up—and it must before long. Be prepared to meet the demand and get the cream, and the other fellow will get the skim milk, by the installation of an

"UTSMAN" QUILL CLEANING MACHINE

You will save the cost of from 4 to 20 laborers. Your spinning room will not be held up waiting for quills to be cleaned. Your weave room will not be held up waiting for filling from the spinning room. Your orders will not be held up waiting for cloth from the weave room. All of which means more profits—profits mean larger dividends.

WOULD YOU LIKE TO
HAVE OUR CATALOG?

The Terrell Machine Co., Inc.

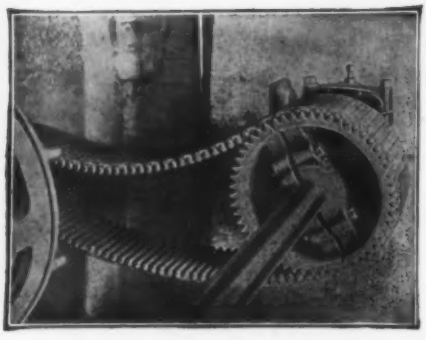
CHARLOTTE, NORTH CAROLINA

WE HAVE JUST RECENTLY ACQUIRED THE "KLEANOL" BOBBIN STRIPPING MACHINE.

ROCKER JOINT

MORSE SILENT C

THE ROCKER JOINT SILENT



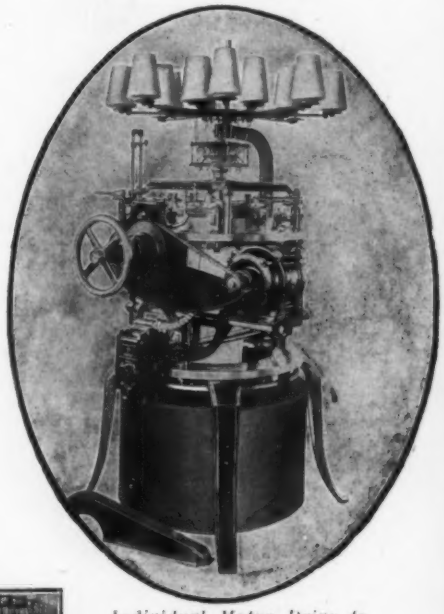
Cotton Gin and Oil Mill.

CLEANLINESS — CONGENIAL
WORKING SURROUNDINGS

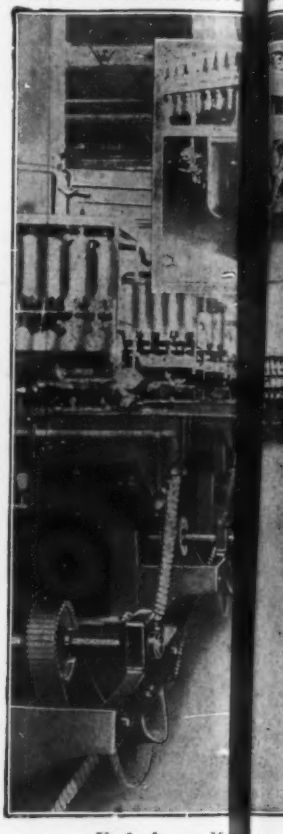
SMOOTH RUNNING
IMPROVING QUALITY

Flexible as a Belt

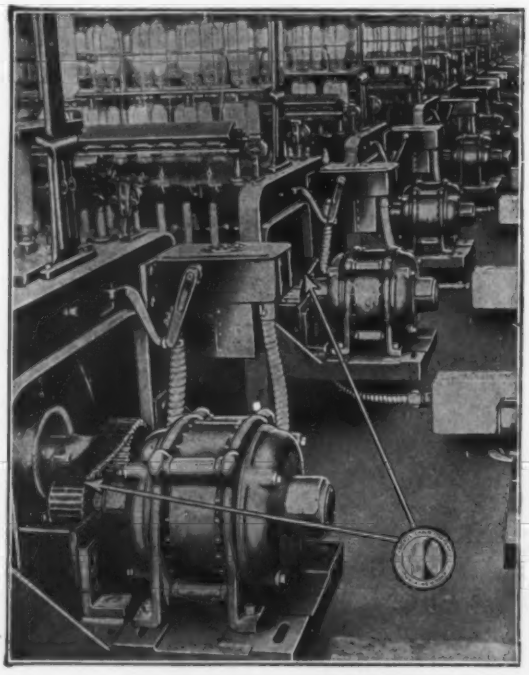
SAVE FLOOR SPACE BY
SHORT CENTERS



Individual Motor Drive to Knitting Machine.



*Underhung Mo
Spinning Frame D*



Standard Drive to Spinning Frame.

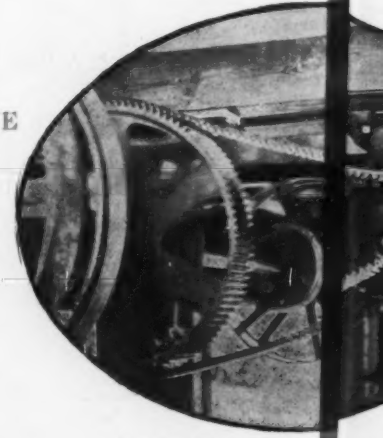
OPERATES
QUIETLY

GUIDE LINKS
HOLD CHAIN ON LINE

POSITIVE
SPEED RATIOS

Better Plant Layout

Better Lighting



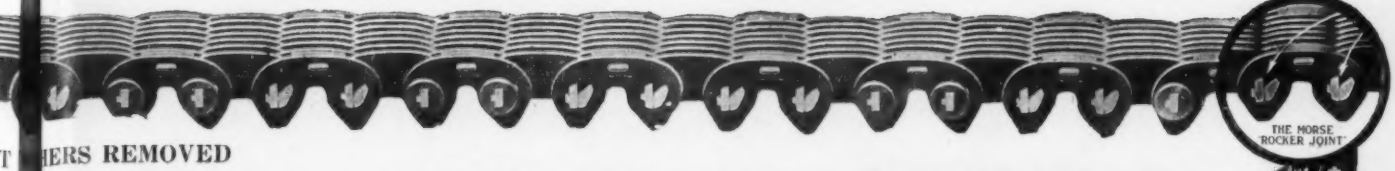
*Overhead Lineshaft D
Gears*

MORSE CHAIN CIT

Engineering Ser ice Bu

Baltimore
Boston
Chicago
Cleveland
Kansas City
Detroit
Charlotte, N.
New York
Philadel
Pittsbur
San Fr
Atlanta

Benefit by MORSE SERVICE as others do



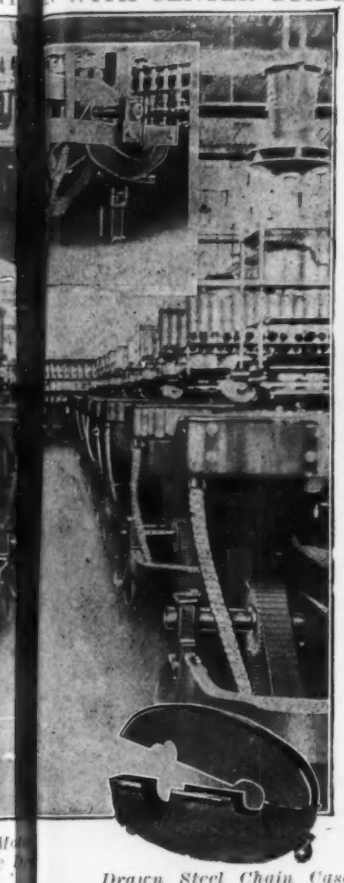
ERS REMOVED

AINS IN TEXTILES

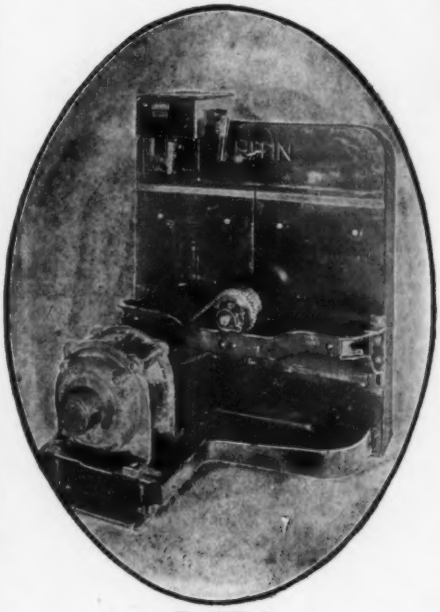
N WITH CENTER GUIDE LINKS

Positive as Gears

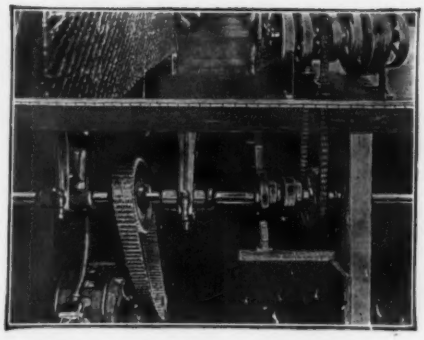
RUN COOL, OIL BATHS
NOT REQUIRED



Drawn Steel Chain Case



Head End
Spinning Frame Drive.



Motor to Line Shaft Under Floor
Through Floor to Twisters.

FREEDOM FROM
OVERHEAD CONSTRUCTION

UNIFORM SPEED
INCREASING PRODUCTION

Carve Shed.

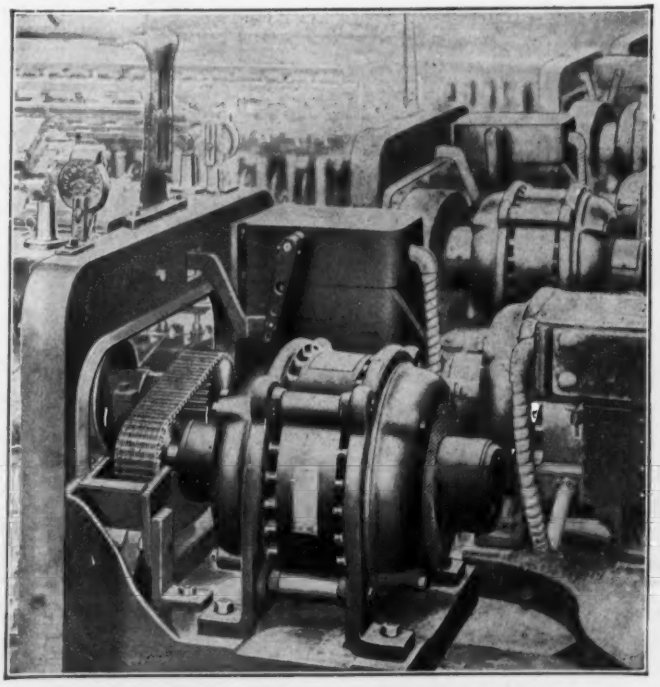
DURABLE

ANY REDUCTION IN
SPEED IS POSSIBLE

WITHOUT SLIP

Enginers planning Power Transmissions Secure Data and Estimates of "MORSE" Drives.

SAVE Construction, Space, Light, Fuel. Producing More with Less.



Close Setting, Standard Spinning Frame Drive.

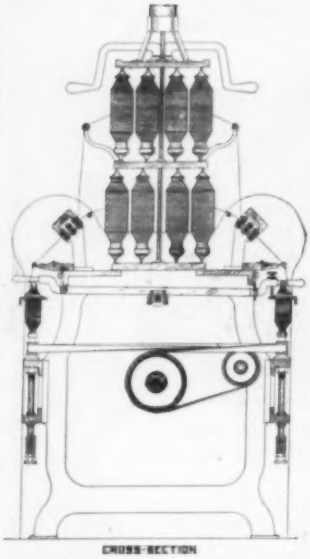
ITHACA, N. Y.

ce Bulletins
Philadelphia
Pittsburgh
San Francisco
Atlanta
St. Louis
Montreal
Minneapolis
Toronto

HAVE UNIFORM FILLED BOBBINS

Install a

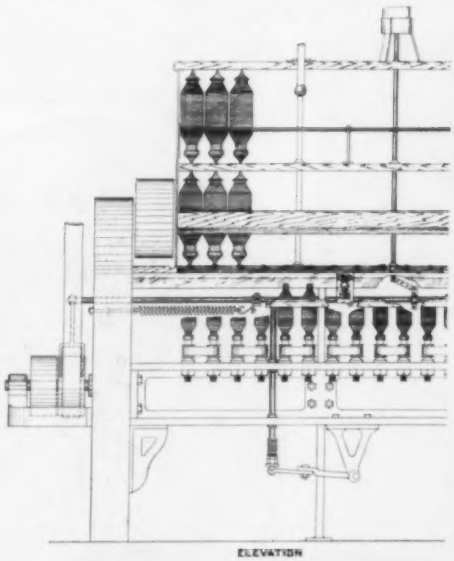
HUNT AUTOMATIC STOP MOTION ATTACHMENT


CROSS-SECTION

It will stop a Spinning Frame that is on filling, when the Thread on the Bobbins has been Built to Desired Height. This SAVES

TIME,
LABOR,
WASTE,
MONEY

All of which means more PROFIT to your mill as you get maximum RESULTS at a minimum COST.


ELEVATION

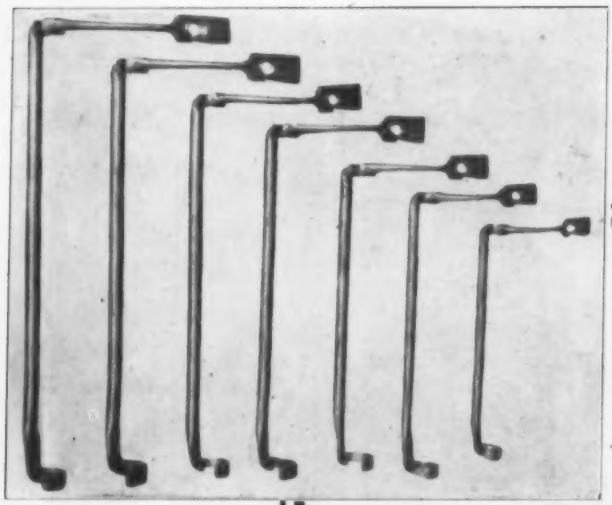
Sold on the basis of money back if not satisfactory

Write for Appointment and Demonstration

Hunt's Automatic Stop Motion, Inc.

For Spinning and Twisting Machines

Office 101-103-105 Kinney Building **Charlotte, North Carolina**



THE ONLY FLYER PRESSER MANUFACTURER IN DIXIE

THEY'LL BEND BEFORE THEY BREAK

They are made from the Best Norway Iron. They fit perfectly. The curls are filed and fitted to flyer before they leave our shop. They have a smooth finish, which prevents lint from accumulating. That's why our

FLYER PRESSER

Is GUARANTEED to Give SATISFACTION.
Large Stock Regular Sizes Made Up, Insures Prompt Shipment.
HAVE YOU OUR PRICES?

SOUTHERN SPINDLE & FLYER CO., Inc.
CHARLOTTE, N. C.
Manufacturers, Overhaulers and Repairers of
COTTON MILL MACHINERY
Pres. and Treas. W. H. MONTY.
V.-Pres. and Sec'y W. H. HUTCHINS.

Don't Discard your Old Card or Spinning Room Spindles—We Can Repair Them—They are Not Worthless — Ask Us for Prices.

A Southern Bank for Southern Business

The South has won its present important position in American commercial and industrial development through the initiative and energy of her native sons—her farmers, manufacturers and business men.

The Citizens & Southern was created in the interest of the South. From its establishment it has striven to promote and protect her interests.

Through its resources and facilities, it has made it possible for the enterprise of the South to be financed without the aid of outside capital, for small business as well as business of the utmost magnitude to be transacted in the South, for the South and by the South.

The CITIZENS *and* SOUTHERN BANK

Member Federal Reserve System

Savannah, Ga. Atlanta, Ga.
Augusta, Ga. Macon, Ga.

Resources over Fifty Million Dollars

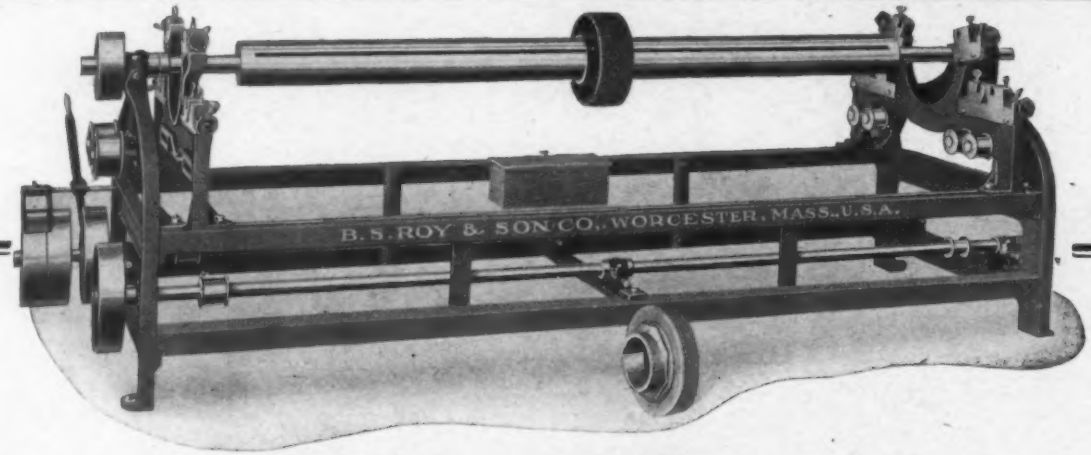
Shambow Shuttles

RE-INFORCED with Red Vulcanized Fibre will outwear the best plain wooden Shuttle two in one and increase loom production and maintain, if not actually improve, quality. They will prevent an end an hour per loom from going down. Figure this out in additional loom hours added to your present producing capacity.

We are Southern Distributors for the SHAMBOW SHUTTLE CO., of Woonsocket, R. I., and maintain in Atlanta a complete Service and Advisory Department, in charge of Mr. A. W. Angell, a direct Factory Representative, whose entire time is at the disposal of the Southern Textile Mills, to help reduce your Shuttle troubles to a minimum. Let us explain to you the advantages of using Shambow Fibre Re-inforced Shuttles and Picker Sticks.

The **WALRAVEN** *Co.*

Machinery and Mill Supplies. ATLANTA, GA.



Lengthening the Life of Napper Rolls

Substantial Evidence of Superiority

If you were to make a trip through all the representative mills throughout the country and to notice the kind and number of mills that use Roy Grinders, the fact would be brought home to you very forcibly that there must be a good reason for such universal preference.

The REASON is the Grinder itself. If you haven't a Roy Machine, send us your name at once, for you are losing money every day that you delay installing one.

Write for Bulletins

B. S. ROY & SON CO., Worcester, Mass.

Established 1868

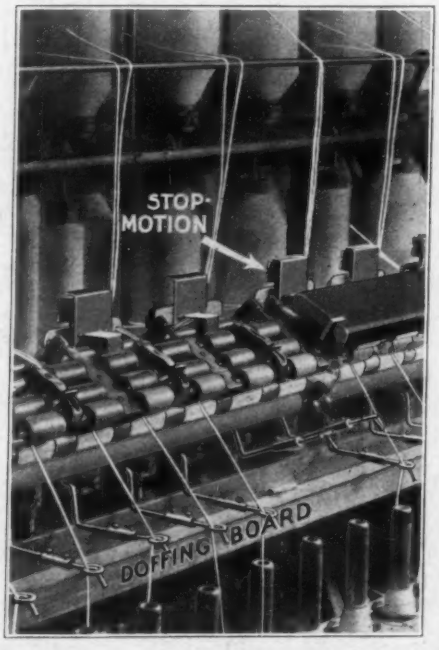
E. M. TERRYBERRY, Southern Agent, 1126 Healy Bldg., Atlanta, Ga.

The "ECLIPSE" STOP-MOTION DEVICE

1--reduces spinning waste 90 percent.

2--increases operatives' capacity 40 percent.

3--doubles the life of your rolls.



AFTER many months of experiment and testing under actual operating conditions, the ECLIPSE STOP-MOTION DEVICE has been perfected and is now offered to the textile industry with the knowledge that it is one of the great improvements since the advent of ring spinning that it will reduce manufacturing costs and improve yarn quality.

No doubt you saw this device in operation at the Southern Textile Exposition and noticed what a simple and effective device it was. The complete control of the spinning frame is placed in the hands of the operative. When an end breaks the stop-motion automatically covers the roving and instantly stops waste. It also operates when one or both bobbins are emptied, thus allowing all of the roving to run from bobbins. 90% saving is made in waste, not to speak of the labor saving and the prevention of mutilated bobbins.

No more rolls can become spoiled by laps. The leather or steel remains true and free from bruises. This decreases broken ends and produces a more even yarn. There is a 95% perfect condition of rolls and a 75% saving in top roll coverings.

Actual operating conditions prove that this perfect device makes these worth-while savings and furthermore saves 40% of labor cost of spinning, increasing the efficiency of spinning frame operatives wonderfully.

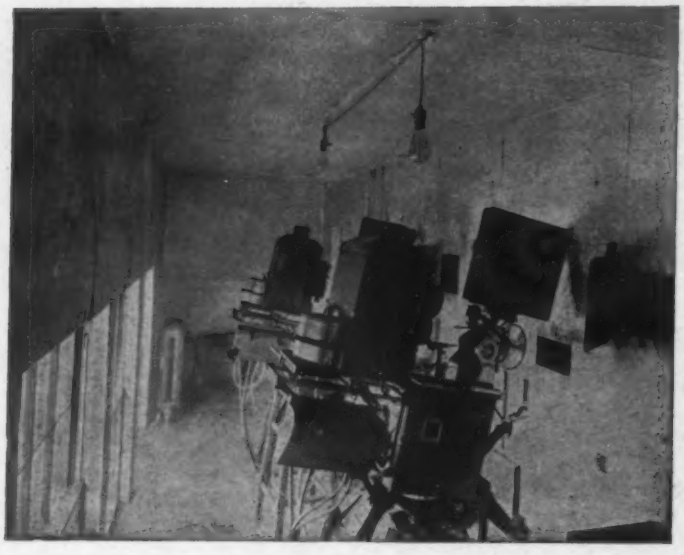
Let us send you full information.
A line today will bring it promptly.

A Word About Ourselves—Although the ECLIPSE Stop Motion is our first offering to the textile industry, we have been manufacturing high-grade mechanical devices for twenty years and the mechanical perfection of our products is known all over the country.

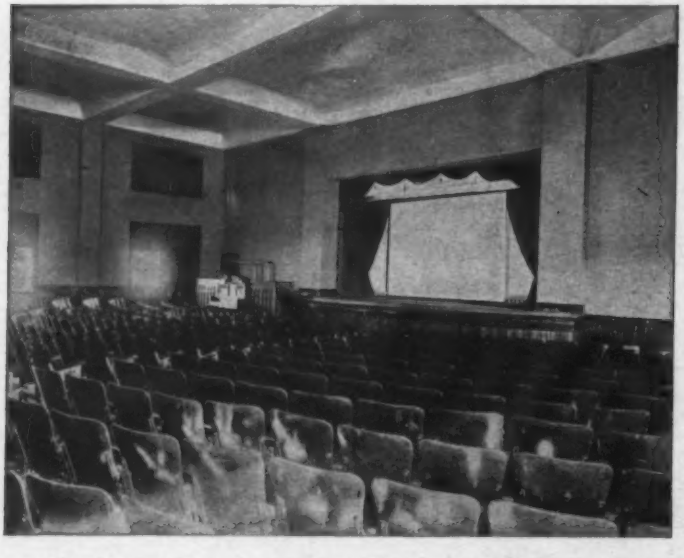
Eclipse Textile Devices, Inc.

Elmira, N. Y.

Better Motion Pictures For Textile Mill Employees



Showing Installation of Power's 6 B Motion Picture Machines in the Tucupau Mills Theatre.



Showing Interior of Tucupau Mills Theatre, Tucupau, S. C.

THE textile industry is demanding the best moving pictures for their employees, and that is why more

POWER'S PROJECTORS

are used by textile mills in the South than all other projectors combined.

Here Are a Few of the Mills Using Power's

Exposition Cotton Mill	Atlanta, Ga.
Bibb Manufacturing Co.	Columbus, Ga.
Bibb Manufacturing Co.	Porterdale, Ga.
Gainesville Cotton Mill	Gainesville, Ga.
Habersham Mill	Habersham, Ga.
Hillside Cotton Mill	LaGrange, Ga.
Manchester Mill	Manchester, Ga.
Milstead Mill	Conyers, Ga.
Thomaston Cotton Mill	Thomaston, Ga.
Roswell Manufacturing Co.	Roswell, Ga.
Trion Company	Trion, Ga.
Rocky Mount Cotton Mill	Rocky Mount, N. C.
Rodman-Heath Cotton Mill	Waxhaw, N. C.
Pomona Mills	Greensboro, N. C.
Cleveland Mill & Power Co.	Lawndale, N. C.
Spray Cotton & Woolen Mills	Spray, N. C.
Issaqueena Mills	Central, S. C.
D. E. Converse Co.	Glendale, S. C.
Monoghan Mills	Greenville, S. C.
Woodside Mills	Greenville, S. C.
Pacolet Manufacturing Co.	Pacolet, S. C.
Tucupau Mills	Tucupau, S. C.
Victor Mills	Greer, S. C.
Victor-Monoghan Mills	Seneca, S. C.
Victor-Monoghan Mills	Walhalla, S. C.
Victor-Monoghan Mills	Jonesville, S. C.
Ware Shoals Manufacturing Co.	Ware Shoals, S. C.
Glenn-Lowry Manufacturing Co.	Whitmire, S. C.
Lanett Mills	Lanett, Ala.
Indian Head Mills	Cordova, Ala.
Selma Manufacturing Co.	Selma, Ala.
Central Mills	Sylacauga, Ala.
Tallahassee Falls Manufacturing	Tallahassee, Ala.

Our experience in Theatre Equipment is at your service

"WE HAVE A SPECIAL OFFER"

Southern Theatre Equipment Company

No. Nine Nassau St.
ATLANTA, GEORGIA

Eighteen Fifteen Main St.
DALLAS, TEXAS

MONROE

Calculating Machine

Office of the Pacific Mills, showing three of the 14 Monroe Machines used by this textile mill.

EVERYBODY is a trained operator on the Monroe

The simplicity of the Monroe operating crank—forward to add or multiply; backward to divide or subtract—enables anyone after a few minutes' practice to go direct from problem to answer. No complements, no reciprocals, no counting keystrokes or setting levers—and every calculation made on the Monroe is proved as you go by the visible check in the proof dials and on the keyboard.

"Makes ALL Figuring as easy as turning the crank."

What the Dixie Cotton Mill Say:

"The Monroe is the best calculating machine for cotton mill use. Every person in our office uses this machine and the fact that it does not require a special operator makes its value to us greater."

Many textile and cotton mills learned of the time and labor saving features of the Monroe by first sending in a coupon like the one below. There's no obligation involved—so why not use it?

The "SHOW ME" Coupon—Mail it today

Monroe Calculating Machine Co., Woolworth Bldg., New York

Without obligating us, (check items desired)
☐ Send us a copy of "Handling Figures at Spindle Speed."
☐ Arrange for a demonstration in our own office.

Firm Name .....

Your Name .....

Address .....

Cotton 5-21

A Comparison of Drinking Fountain Streams

Vertical Stream Bubbler Condemned Everywhere

Camouflaged Vertical Stream

Rainbow Stream—Hose-like difficult to drink from

The above are reproductions of some of the most common types of Fountains now on the market.

No. 1. Shows the vertical stream which permits saliva and waste water from the drinker's mouth to fall back upon source of supply. This type of fountain is now considered obsolete everywhere.

No. 2. A slight modification of the vertical stream type. Stream is set at a slight angle and is little, if any improvement over the former.

No. 3. Is more sanitary if properly used. However, it is impractical, as the stream is hose-like and there is no definite drinking point. Therefore, a drinker places mouth as near water outlet as possible. Result the same as No. 1 and No. 2.

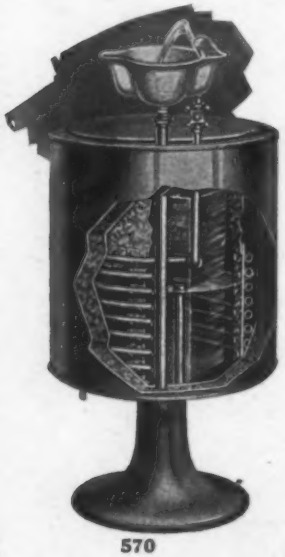
THE PERFECT STREAM PURITAN CANTONMENT "MOUND BUILDING" STREAM

This stream is produced by the famous Cantonment "2-stream projector" illustrated in connection with our Puritan 562 Fountain Head. This stream producing device was designed for, approved and adopted by the Government during the war. Now recognized as superior by the largest interests and schools in the country.

Practical drinking mound is formed by mechanical means. An interference is set up in the stream which retards the movement of the water at the apex of the arc. This forms a localized drinking mound, while the formation of the stream makes it impractical to drink from any other point.

—Definite drinking point
—Sanitary and practical.

Patents covering this stream are entirely controlled by this Company.



570

PURITAN 562 FOUNTAIN HEAD

PURITAN 570 "CANTONMENT" COOLER FOUNTAIN

Puritan "Cantonment" Coolers are designed to connect pressure lines and are so constructed that the drinking water does not come in direct contact with either the ice or melted ice water, but is circulated through a brass coil which is tinned both inside and outside.

This Cooler Fountain as shown equipped with 2-stream "mound building" projector is the most efficient and sanitary device of its kind on the market.

Write for illustrated literature today.

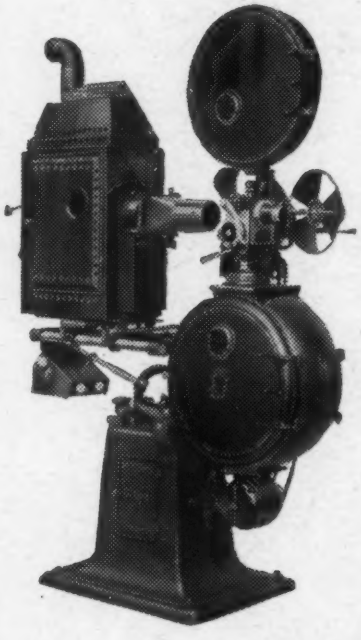
HALSEY W. TAYLOR COMPANY

PARK AVENUE WARREN, OHIO

EVENTUALLY

IT WILL BE a MOTIOGRAPH PROJECTOR

MOTIOGRAPH DeLuxe



TEXTILE MILLS
INDUSTRIAL PLANTS

ATTENTION!

YOU—should become acquainted with the MOTIOGRAPH Motion Picture Machine, the Projector Predominant.

Motiographs are built right by twenty-three years of experience in manufacturing motion picture equipment.

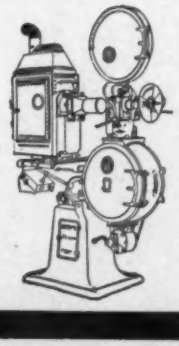
They project CLEAN, BRIGHT, ROCK STEADY, FLICKERLESS pictures at the LOWEST UP-KEEP COST.

Inquire About This Faultless Projector Before You Order and Let Us Show You Its Wonderful Features.

ABSOLUTELY GUARANTEED

COMPLETE THEATRE EQUIPMENTS—FROM FILM TO SCREEN

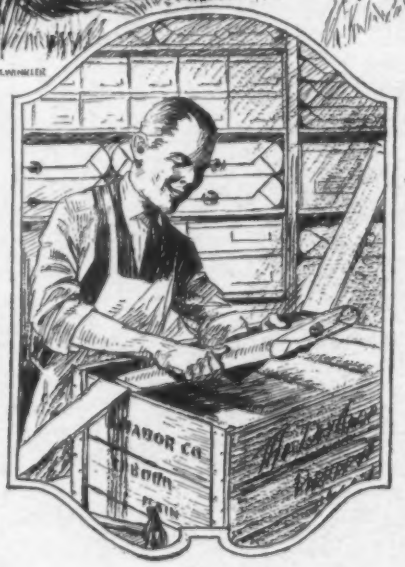
EVERYTHING FOR "THE MOVIES."
WRITE FOR DETAILED CATALOG.



Monarch Theatre Supply Co.

228 Union Avenue, MEMPHIS, TENN.

SOUTH'S LARGEST THEATRE SUPPLY HOUSE



—to the Journey's End

By rail or boat, by truck or wagon, through rain and storm, your goods travel a long, hard way from your mill to the retail store.

No matter how often good wood boxes are loaded and unloaded, handled with hooks, piled under heavy freight, dropped from car to platform and from truck to the ground, they guard your goods from damage.

Good wood boxes can always be opened for inspection or repacking by jobber or wholesaler. It takes only hammer and nails to make them ready for duty again. They carry your product safely to the journey's end.

Send for our illustrated Manual on Wooden Box and Crate Construction— practical — complete — authoritative.

200 pages—$3.50

Good Wood Boxes

Backed by the National Association of Box Manufacturers

GENERAL OFFICES:
1553 CONWAY BUILDING, CHICAGO

New England:
1013 SCOLLAY BLDG.
Boston, Mass.

New York:
17 WEST 46th STREET
New York, N. Y.

Eastern:
433 CALVERT BLDG.
Baltimore, Md.

Southeastern:
210 WALTON BLDG.
Atlanta, Ga.

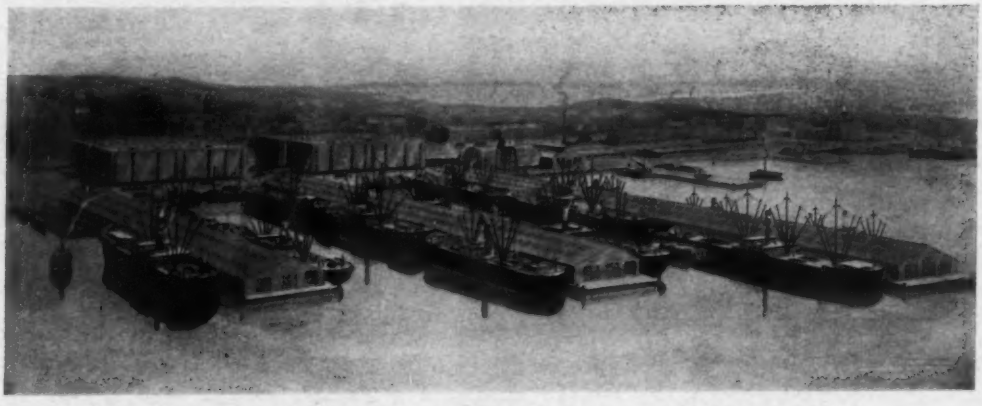
New York's Newest

Dock-Warehouse and Railroad Terminal

for STORAGE *of*

DOMESTIC AND FOREIGN COTTON
FREE AND BONDED GENERAL MERCHANDISE

A unique plant combining many new features and facilities not obtainable elsewhere in New York.



POUCH TERMINAL

Clifton, Staten Island. **City and Port of New York**

3,000,000 cubic feet of modern storage area now in operation—
1,250,000 cubic feet addition under construction.

THREE LARGE COVERED PIERS ADJOINING CITY OF NEW YORK'S GREATEST DEVELOPMENT

All our stores and piers are completely protected
latest type of Sprinklers—Lowest Insurance Rates

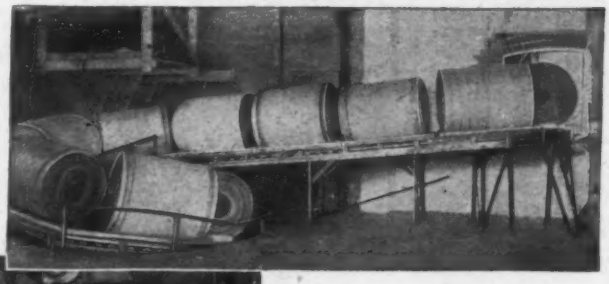
THE ONLY FUMIGATING PLANT FOR FOREIGN COTTON IN THE CITY OF NEW YORK IS LOCATED ON OUR PREMISES.

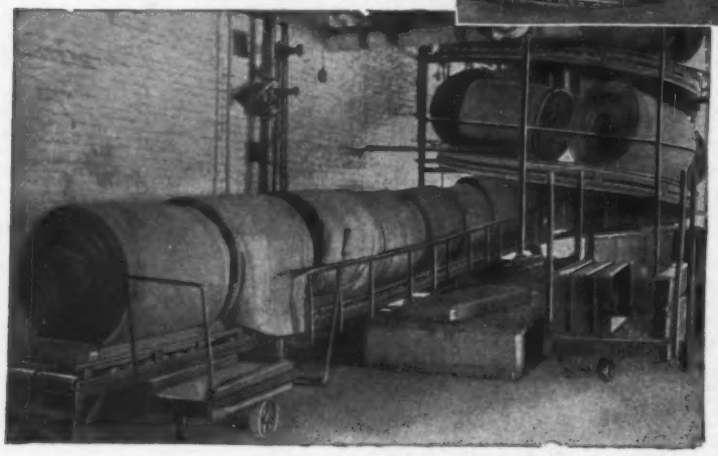
New York Cotton Exchange License—bonded employees—direct all rail connection with trunk lines—independent of float or lighterage system.

Illustrated booklet and rates on application

Executive Office: **17 State St., New York**

How the Arnold Print Works, North Adams, Mass., are speeding up production and cutting the cost of handling, by the use of Mathews Conveyers.





Rolls of large diameter passing down Mathews Gravity Roller Spiral.

Contrast the small opening in the wall, with that which would be needed if hand or industrial trucks were used.

Production

Mathews Gravity Conveyers speed up production by establishing continuity.

From machine to machine—from building to building—the raw materials develop into the finished product.

Men and trucks are displaced—production increased—conveying cost reduced. Free gravity furnishes most of the power—in many instances all of it.

Conditions in one plant demand belt conveyers—in another automatic lifts—coupled always with gravity conveyers to keep initial cost and maintenance at the lowest point.

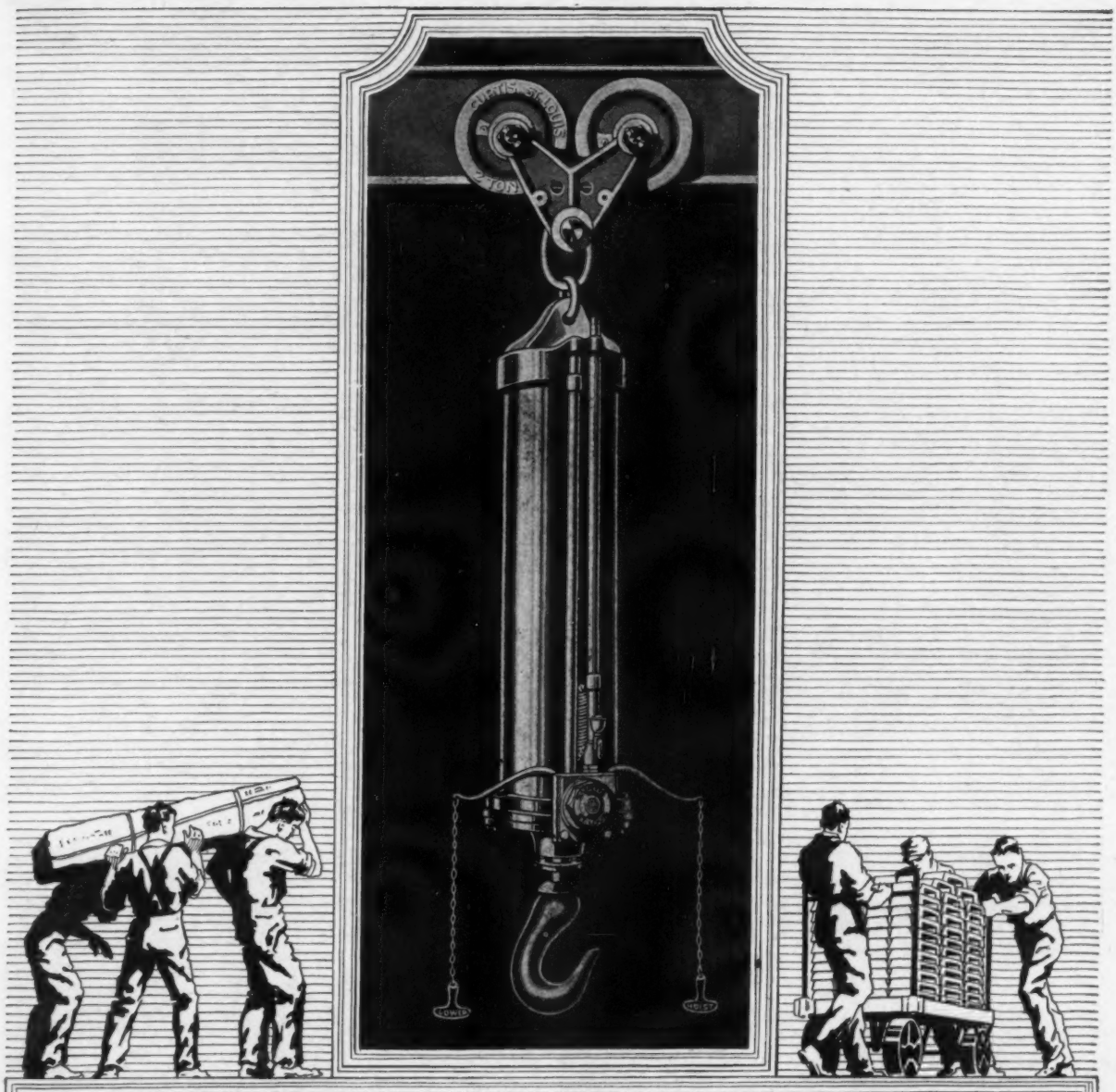
The cost of a Mathews conveying system is only a small part of what it will save you.

A Mathews engineer will be glad to go over your plant and submit his recommendations. You will not obligate yourself in any way by asking for this service.

Write today for catalog showing many installations.

MATHEWS GRAVITY CARRIER CO.
154 Tenth St., Ellwood City, Pa.
Branch Factories: **Port Hope, Ont.,--London, England**

MATHEWS
SPEED ECONOMY
GRAVITY ROLLER CONVEYER



CURTIS AIR HOISTS and TROLLEYS
SAVE MAN-POWER

CURTIS Trolleys are constructed with self-equalizing steel side frames and large inclined wheels fitted with shock-absorbing Hyatt Flexible Roller Bearings—making them easy to start—easy rolling and long lasting.

CURTIS All-Steel Air Hoists, in design and construction, present the perfected results of 25 years of manufacture. They are simple, safe and economical for light and medium loads. Capacities, 800 to 20,000 lbs.

CURTIS PNEUMATIC MACHINERY COMPANY

1571 Kienlen Avenue ST. LOUIS, U. S. A.

Branch Office: 532-R Hudson Terminal, New York City

Wooden Packing Cases

All Styles
Manufactured from
Georgia Pine
White Pine
Poplar
Cypress
and Gum

The interlocking packing case, shown in the upper left-hand corner, has advantages over other packages, especially for carrying heavy materials. In the first place lighter weight material can be used in its construction on account of the interlocking reinforcement. It is harder to pilfer or break open than other packing cases.

We are now in position to give all orders for shooks prompt attention, and will be glad to quote prices and delivery dates on any cases you might require. Our prices are very much reduced, try us.

In addition to rectangular tanks, we manufacture a complete line of round tanks equipped with round iron hoops and malleable draw lugs.

All our tanks are manufactured from heart cypress tank stock and we guarantee them to hold water.

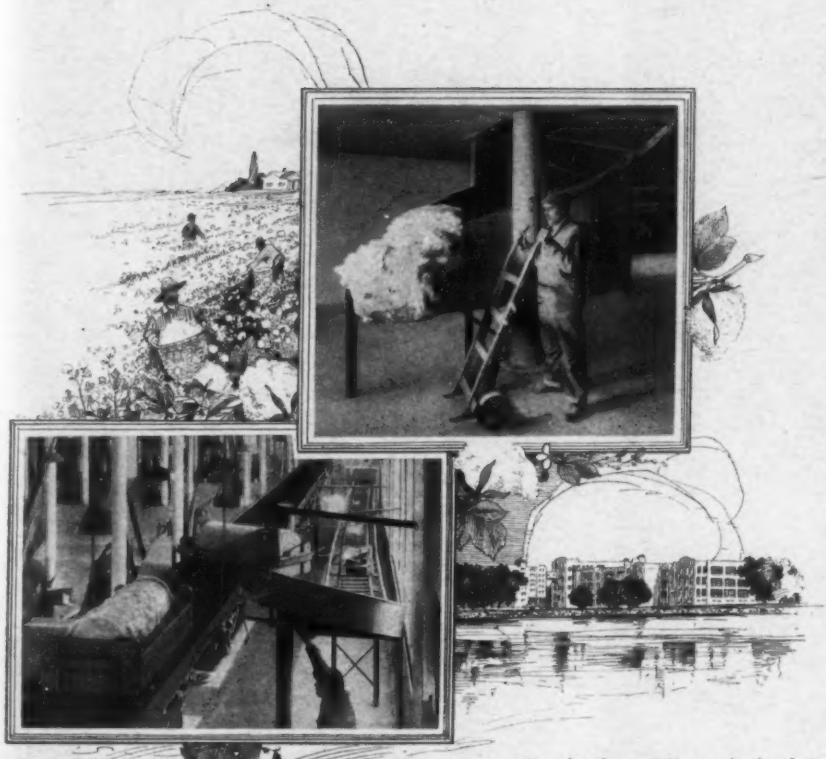
Your inquiry solicited.

Hightower Box & Tank Co.

Corner Humphreys and Glenn Streets

Box 1025 **Atlanta, Ga.**

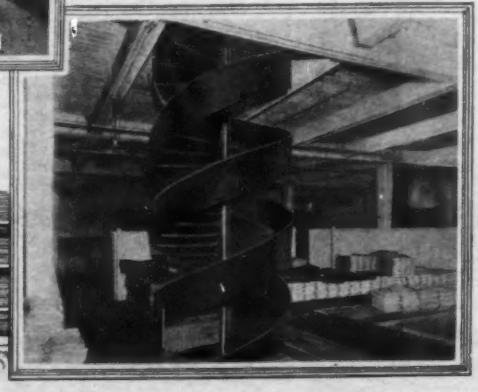
STANDARD Indoor Transportation



Not a conveyor for all purposes but a Standard Indoor Transportation System of conveyors built to fit specific requirements.

Through all the processes of textile manufacture, from the bale to the bolt of woven material delivered to the consumer, Standard Conveyors perform an important service. ¶Warehouses, carding, spinning and weaving mills, dyeing and finishing plants are installing Standard Automatic Conveyors as the most economical method of indoor transportation. ¶Whether a unit or a system, economy in production through lowered handling costs is the inevitable result.

Standard gravity spiral chutes provide *free power* transportation from upper to lower floors. Standard gravity roller conveyors and belt or chain slat conveyors eliminate slow, wasteful trucking of bales, lap cradles, boxes of spindles, etc. Standard inclined or straight lift elevators automatically load, elevate and discharge, insuring uniform speed of production and preventing accumulations at elevator shafts. ¶By installing Standard Automatic time-, labor- and space-saving conveyors, old mills considered outgrown have been found equal in capacity to much larger mills depending on obsolete handling equipment.



Write for illustrated catalog, "Entrance to Better Knowledge on Handling Methods."

Standard Conveyor Co.
North St. Paul, Minn.

New York Office, 227 Fulton St.
Chicago Office, 549 W. Washington St.

Philadelphia—13th Floor, Otis Bldg.
Boston—113 State St.

Atlanta—829 Trust Co. of Ga. Bldg.
Representatives in all principal cities.

"Dat sho' am a handy baby, Boss"

"Yas, suh, I don't need no nigger helping me when I use dat Handy Andy truck, 'cause, Boss, dat baby jus nachelly lifts dem heavy bales by itself, and it lifts 'em without gettin underneath 'em too. Why Boss, I can load fifteen hunnard pounds on dat truck without any help and do it quicker dan I usta could with dem old style trucks with two niggers helping me."

The HANDY ANDY ONE MAN TRUCKS are no experiments but are being used in some of the largest plants in this country. Their success is due to their simple strong features that can be found in no other truck. It is a one man truck and lever on wheels. It lifts the package without getting under it. It can be used in cramped places and with the boxes or packages against the walls. No helpers needed. One man and the Handy Andy handles the heaviest packages.

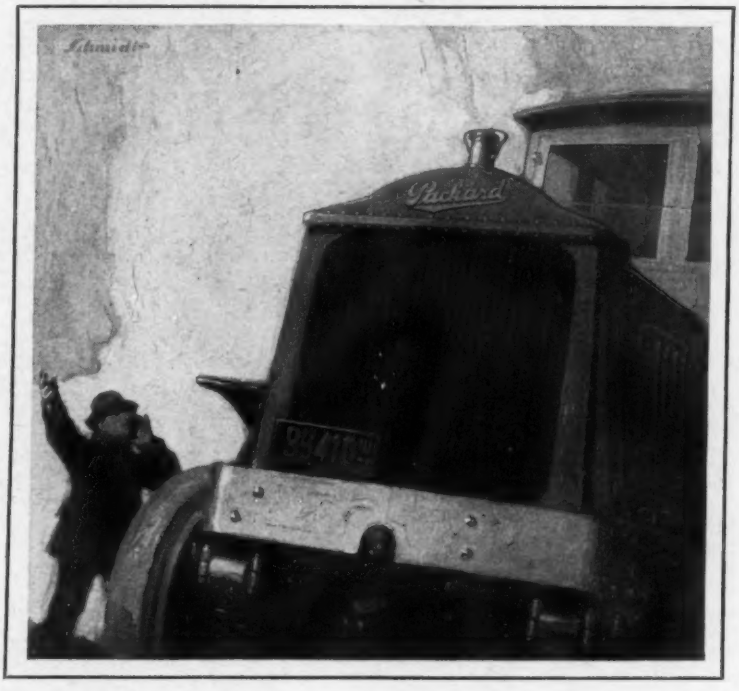
Let us tell you about the many features of this time and labor saving little truck, and the secret of how it accomplishes its work so easily.

Handy Equipment Corporation
PEORIA, ILLINOIS.
J. KIRK ROWELL CO., Dist., Mgr.
716 Atlanta Trust Bldg., Atlanta, Ga.

HANDY ANDY
ONE MAN
TRUCK

Type B
With
Movable Axle

PACKARD



They Earn More and Save More

At the same time that they earn money, Packard Trucks save money, by their unfailing performance, their low-cost operation, and their scientific rating to the work required of them.

A typical example of this better hauling at lower cost is the record made by a Packard Truck for the Germania Mills, of Holyoke, Mass. Equipped with a special van body, this truck carries goods on a regular schedule from Holyoke to New York City.

Not only does this Packard haul the goods efficiently and economically, but it also effects substantial savings through the elimination of boxing costs and railroad freight charges on wooden crates. Its special body makes unnecessary any separate containers.

All Packard owners have the advantage of nationwide service facilities established to keep their trucks at the highest possible level of earning ability.

PACKARD MOTOR CAR COMPANY • DETROIT

Ask the man who owns one

LINK-BELT

SILENT CHAIN

Flexible as a Belt
Positive as a Gear
More efficient
than either

The Ideal Drive for Textile Machinery

LINK-BELT Silent Chain has rightfully earned its reputation, as "The Ideal Drive for Textile Machinery," because it combines in one drive the best points of all others, minus their disadvantages.

Increased production, power saving, safety, bettered working conditions and a better quality of product are some of the results of its use in textile work. It is the ideal drive for transmission from every motor, whether to machine, countershaft or lineshaft.

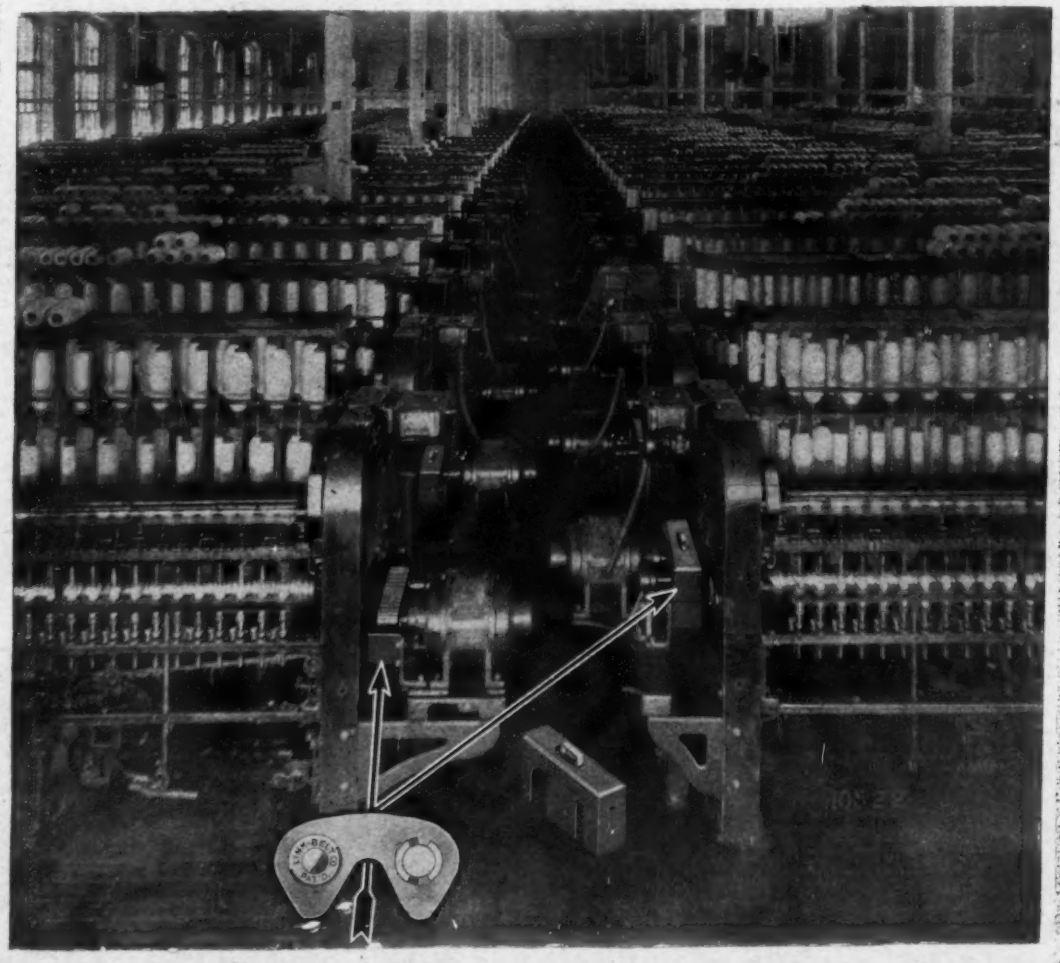
Send for book No. 425, "Link-Belt Silent Chain for Textile Machinery."

707

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York .....299 Broadway Boston .....49 Federal St.
Charlotte, N. C., J. S. Cothran, Commercial Bank Bldg. Atlanta, Ga. .....707 Citizens & Southern Bank Bldg.
Other Offices in Principal Cities.



COCHECO

BELTING

What Does Your Belt Give You, Power Contact Or Power *Delivered?*

Have you a power leak in your belt? Do you know how to detect a leak? How much power do you lose between the point where the power is made and the point where you use it? Does your belt give you power **delivered** or just a contact with power?

Be fair with yourself and answer these simple questions squarely; you can quickly appraise what you've got—efficient power transmission or a "white elephant." If you are not familiar with the way to go about it, send us a questionnaire with full particulars of your problem—it will not obligate you in any manner. We have been building **Cocheco Leather Belts** for nearly eighty years, so we know quite a lot about belting. Write us—we'll be glad to hear from you and answer your questions.

I. B. WILLIAMS & SONS

DOVER, NEW HAMPSHIRE

BOSTON, MASS., 157 Summer Street NEW YORK, N. Y., 71-73 Murray Street

CHICAGO, ILL., 14-16 N. Franklin Street

SKF
Research Laboratory established at Philadelphia to co-operate with the Gothenburg Laboratories in the study of the American Manufacturers' friction problems.

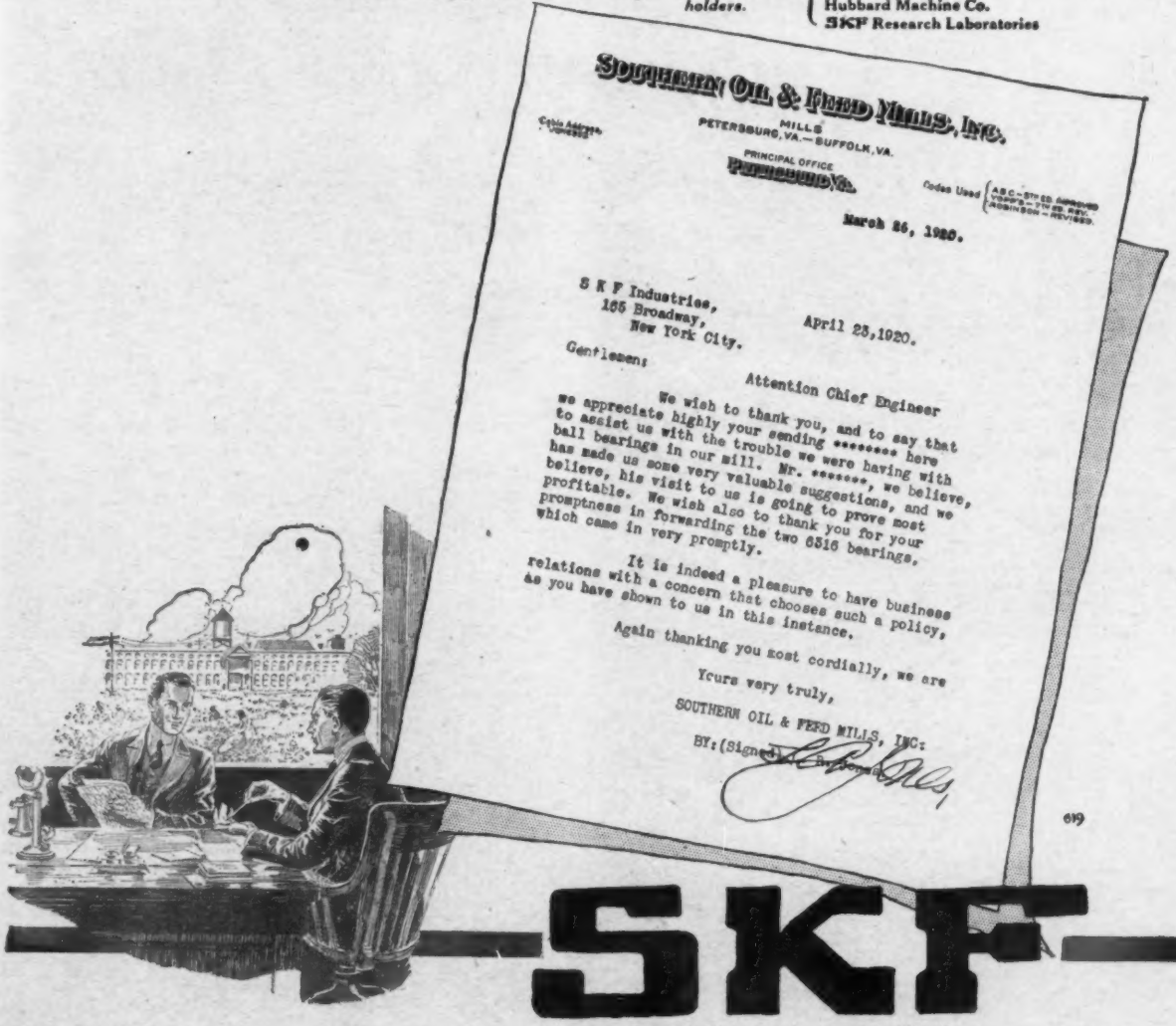
THE technical advice brought you by our engineers embodies the experience of highly trained organizations in all parts of the world in the solving of friction problems.

This international experience is both technical and practical and is acquired in co-effort with the best international research endeavor.

SKF service in America is linked to this international experience. Its tangible evidence is found in products marked "**SKF**" and in the advice supplied you by our engineers.

SKF Industries, Inc.
165 Broadway, New York City

Supervising at the request of the stockholders.
- The Hess-Bright Manufacturing Co.
- Skayef Ball Bearing Co.
- Atlas Ball Co.
- Hubbard Machine Co.
- SKF Research Laboratories



SOUTHERN OIL & FEED MILLS, INC.

MILLS
PETERSBURG, VA.—SUFFOLK, VA.

PRINCIPAL OFFICE
PETERSBURG, VA.

March 26, 1920.

S K F Industries,
165 Broadway,
New York City.

April 23,1920.

Gentlemen:

Attention Chief Engineer

We wish to thank you, and to say that we appreciate highly your sending ******* here to assist us with the trouble we were having with ball bearings in our mill. Mr. *******, we believe, has made us some very valuable suggestions, and we believe, his visit to us is going to prove most profitable. We wish also to thank you for your promptness in forwarding the two 6316 bearings, which came in very promptly.

It is indeed a pleasure to have business relations with a concern that chooses such a policy, as you have shown to us in this instance.

Again thanking you most cordially, we are

Yours very truly,

SOUTHERN OIL & FEED MILLS, INC.

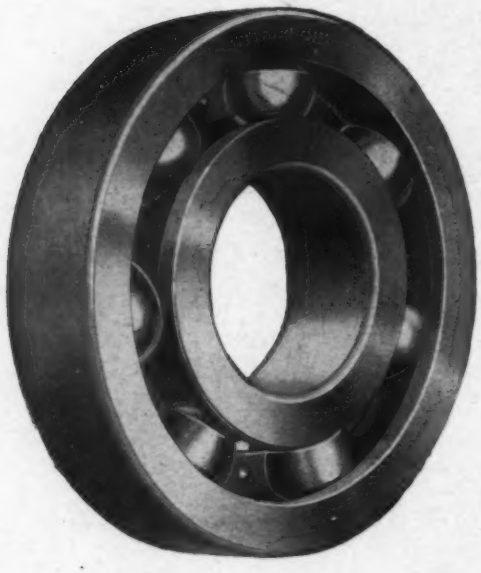
BY:(Signed)

619

SKF

Among these products now offered are:

Single row deep groove ball bearings. Thrust bearings. Steel balls.
Double row self aligning ball bearings. Transmission equipment.



In Cotton Card Cylinders Strom Bearings Save Time and Insure a Better Product

When used on cotton card cylinders, Strom Bearings with their large balls and deep-grooved raceways, reduce friction so that the cylinders can be turned by hand thus facilitating cleaning. Slippage on the driving belt is reduced as less power is required to start the machine.

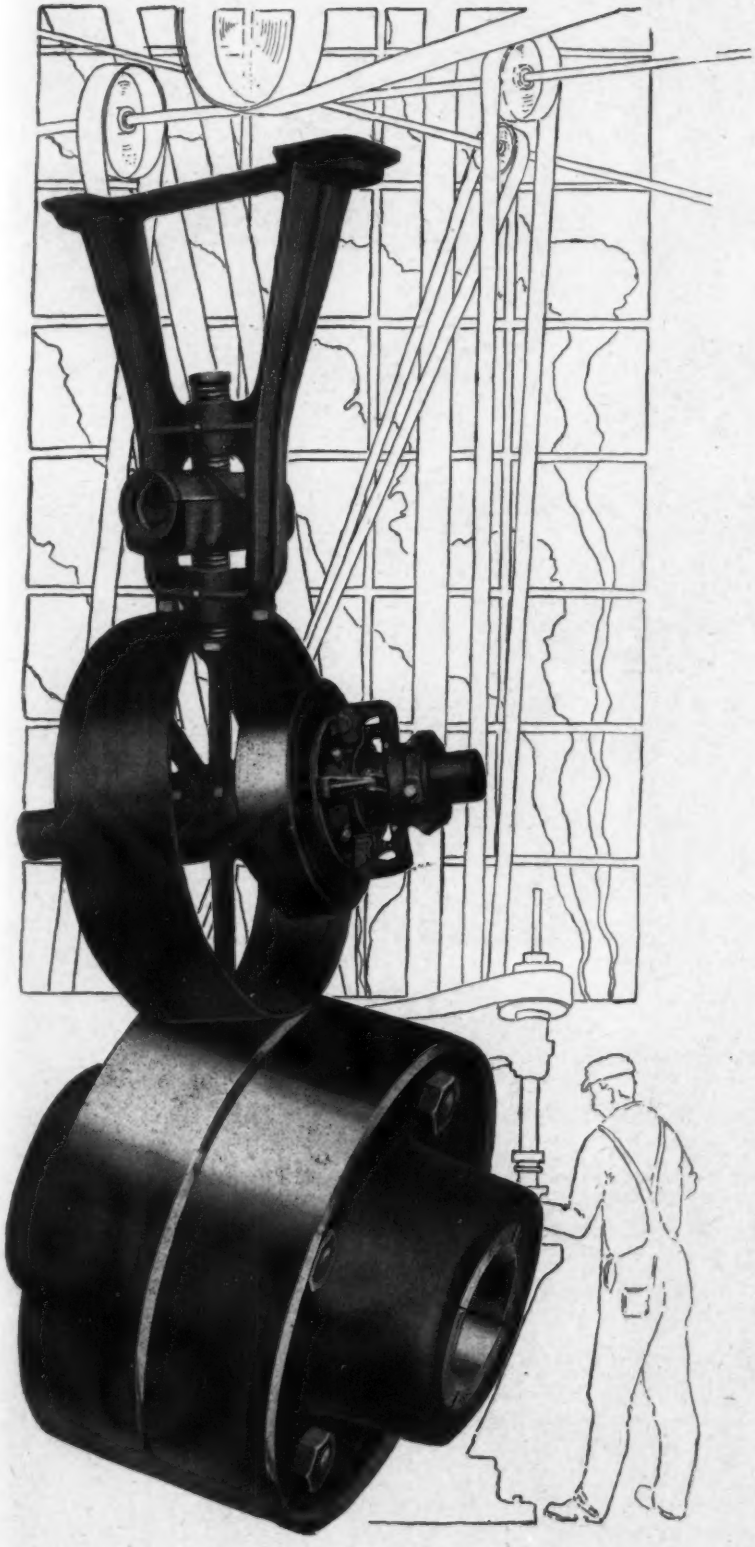
In their oil-tight and dust-proof housings these bearings protect the stock from grease.

Because Strom Bearings stand years of service without wearing, the shafts can be kept in alignment insuring a more uniform product. Delays due to breakdowns are avoided. Complete bearing equipment for any textile installation may be obtained through the Aldrich Machine Works, Greenwood, S. C.

The U. S. Ball Bearing Mfg. Co.
(Conrad Patent Licensee)
4544 Palmer St., Chicago, Illinois.

(131)

Strom BEARINGS



TRANSMISSION APPLIANCES

Designed on Time-Tried Principles

In designing and selecting power transmission appliances, as in everything else, experience is the best teacher. We've been specializing on this class of service for 64 years. We know **which** appliances meet every condition to best advantage and **why**. Our transmission appliances are designed on time-tried principles and our engineers are well qualified to judge which of these principles applies to the solution of any new problem presented. Their services are freely at your disposal.

The T. B. WOOD SONS CO. Line is complete to the last detail and endorsed by its performances in every department of every class of mill.

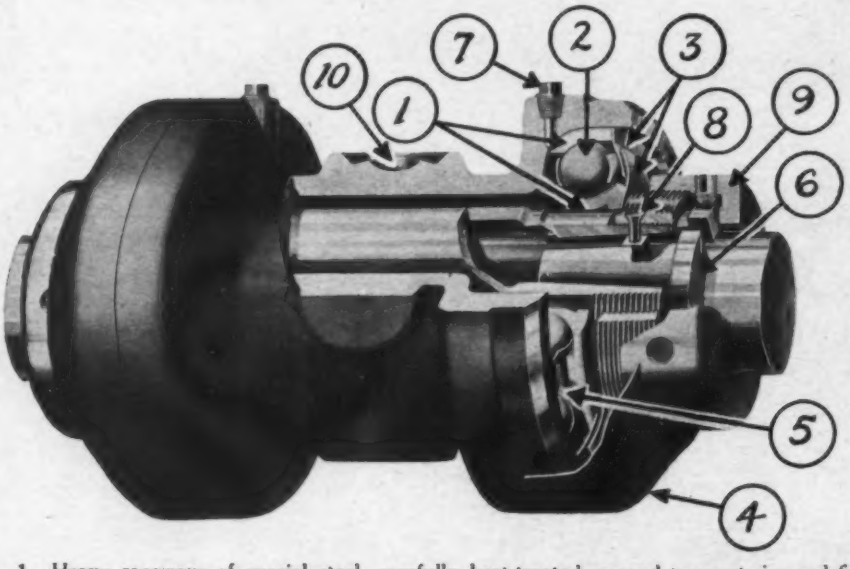
Details of whole line on request.

T. B. WOOD'S SONS CO.

CHAMBERSBURG, - PENN.

BALL BEARINGS Chapman

YOU PAY FOR THEM WHETHER YOU BUY THEM OR NOT



Note the double row of extra large balls and general sturdy construction. The factor of safety enables the bearing to easily carry a much larger load than the shaft will withstand. Each row of balls has its own independent raceway and cage.

1. Heavy raceways of special steel, carefully heat-treated, ground to exact size and finally polished to a mirror-like surface provide a frictionless roadbed for the revolving balls.
   Observe that both raceways are curved so as to afford the greatest possible support for the balls. ***When under load*** the resiliency of the steel raceways allows a certain area of contact (not point contact) between the ball and both raceways, thereby enormously increasing the load carrying capacity, without appreciable increase in friction or affecting the efficiency of the bearing.
2. Balls are of the best Chrome Nickel Steel accurate to .0001 part of an inch. In all Chapman Bearings the ball diameter equals approximately one-third the shaft diameter.
3. Double grease retainers prevent the escape of the lubricating grease and form a grease seal through which dust and dirt cannot penetrate. The bearing is also strictly ***drip proof*** thereby preventing spoilage of goods and unsightly oil spots on the floor.
4. Pressed steel dust caps, in combination with the grease retainers mentioned above, hermetically seal the rolling structure against all foreign matter.
5. A heavy pressed steel cage keeps the balls properly spaced. Being electrically welded there are no rivets to shear off or otherwise work out and drop into the ball path.
6. Split tapered steel wedges lock the bearing firmly to the shaft, thereby preventing any scoring or wearing of the shaft. Being clamped in place, the bearing not only takes the radial load, but also the end thrust in either direction without the use of set collars. Notice there are ***no moving parts in contact with the shafts.***
7. Lubrication with a little grease once or twice annually is sufficient. Each bearing when it leaves our factory contains enough lubrication for a one year run under any ordinary conditions.
8. All adjustments are made at our works, and pinned in place to prevent tampering. No further adjustment is necessary by the customer.
9. When screwed in position these malleable adjusting nuts are held in place by set screws, and prevent the sleeve from becoming loose or backing out.
10. Ball and socket seats in the housing insure perfect self-alignment, as there is ample freedom of movement of bearing in hanger frame to accommodate any condition of sprung or misaligned shafting. This in reality is a mechanically correct self-aligning bearing, this feature being obtained ***without disturbing the rolling components*** of the bearing itself or sacrificing the load carrying capacity and durability of the bearing.

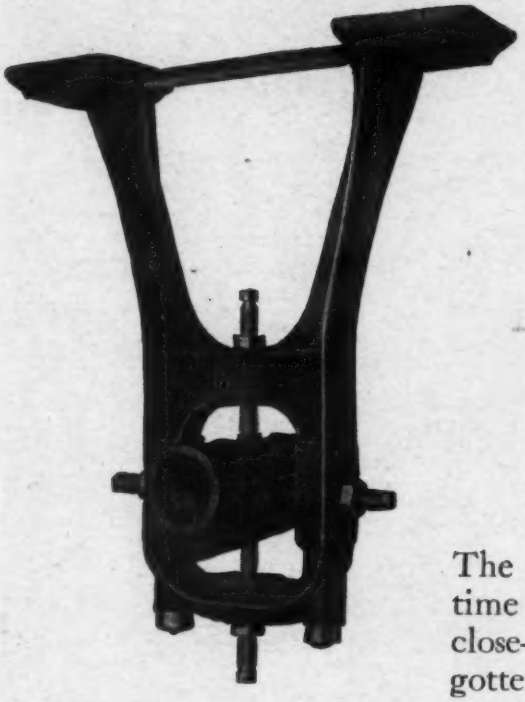
They Fit Your Present Hanger Frames

TRANSMISSION BALL BEARING COMPANY

1061 MILITARY ROAD - BUFFALO, N. Y.

BRANCHES: New York Chicago Philadelphia Cambridge, Mass. Toronto, Canada

Representatives in the Principal Cities.



ONEIDA

hangers and pulleys are today's insurance of tomorrow's output

The problem of surviving today leaves little time for consideration of tomorrow; in these close-buying times future needs are often forgotten in the struggle for lower costs.

But level-headed factory equipment buyers today are installing Oneida four-point Hangers and Steel Split Pulleys and letting today take care of tomorrow. A cheaper hanger might carry their shafting efficiently today, but what of tomorrow? Oneida products as shop-standards all over the country answer that question.

Oneida four-point hangers, stronger by at least 30% than any other four-point hanger because of right distribution of metal, will carry a shaft with little vibration. They will not crystallize and break under this strain that finds the weak spots in other hangers when they are needed most.

The grooveless, oval crown of Oneida Steel Split Pulleys presents a smooth, uninterrupted surface to which a belt *naturally* conforms. Power is transmitted at low belt tensions; an Oneida-carried belt will not collapse under excess loads.

With the Oneida pulleys on your shafting and with the shafting in Oneida hangers, you can meet today's requirements and feel sure that you have anticipated those of tomorrow.

Dodge Sales and Engineering Co.

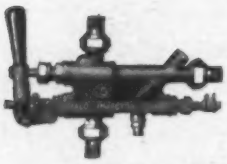
Distributor of the products of the Dodge Manufacturing Company and the Dodge Steel Pulley Corporation

General Offices: Mishawaka, Indiana

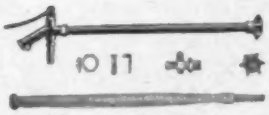
Works: Mishawaka, Indiana, and Oneida, New York

Canadian Plant: Dodge Mfg. Co. of Canada Ltd., Toronto and Montreal

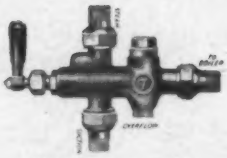
Philadelphia Cincinnati New York Chicago St. Louis Atlanta Boston
Pittsburgh Minneapolis Houston Seattle Newark



"Sherwood" Double Tube Injector

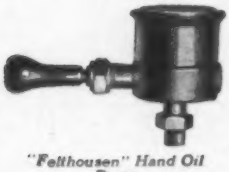


"Favorite" Flue Blower



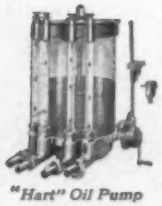
"Buffalo Automatic" Injector

"Buffalo" Glass Body Cylinder Oil Pump



"Felthousen" Hand Oil Pump
Capacities, ¼ to 3 pints, brass or glass body

"Sherwood" Grease Cup



"Hart" Oil Pump

"Eagle" Ejector

Time Tried Steam Specialties Assure Long-Continued Service

Demand Sherwood Engineering Specialties which have proven their worth in actual service over a long period of years.

Many Sherwood products have been in daily operation for 5, 10, 20 and 25 years.

Designed right, built right—with only the best of materials entering into their construction—Sherwood Engineering Specialties are purposely manufactured to merit the confidence and faith which engineers everywhere have placed in the products bearing the Sherwood name.

It will pay you—as it has paid hundreds of other engineers—to standardize in Sherwood.

SHERWOOD MANUFACTURING COMPANY
BRASS FOUNDERS AND FINISHERS
Sole Manufacturers of Sherwood Engineering Specialties
BUFFALO, N. Y.

(13)

"Sherwood" Screw Feed Grease Cup

"Felthousen" Glass Body Hand Cylinder Oil Pump

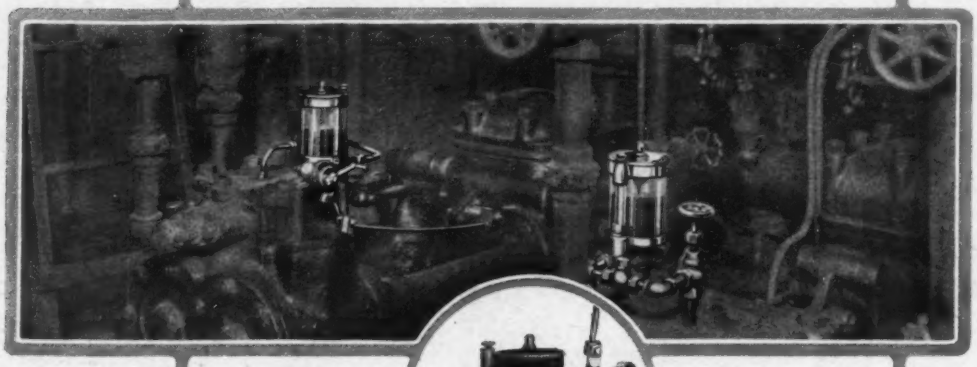
Gravity Oil Cup

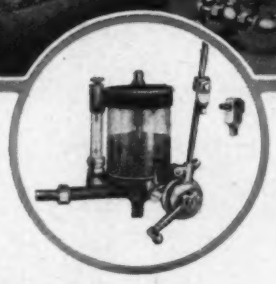
"Niagara" Plain Grease Cup

Sight-Feed Oil Cup

SHERWOOD
ENGINEERING-SPECIALTIES

Hart Oil Pumps Installed in Boiler Feed Pumps in the Plant of Republic Metalware Company, Buffalo, New York





Red Brass and Yellow Brass

The Best is None too Good for Sherwood Engineering Specialties

Of course there's a difference in brass. Red brass is harder—gives more lasting service than yellow brass which does not possess such good wearing qualities.

While red brass is more expensive than yellow brass, it is used exclusively in the manufacture of Sherwood Engineering Specialties subjected to hard usage or pressure of any kind, that long life and never-faltering service may be an absolute certainty.

Insist on red metal in the steam specialties for your plant. Insist on Sherwood Engineering Specialties and you will get it.

SHERWOOD MANUFACTURING COMPANY
BRASS FOUNDERS AND FINISHERS
Sole Manufacturers of Sherwood Engineering Specialties
BUFFALO, N. Y. (12)

Have you received a copy of the Sherwood Book? It is well worth reading. It describes all Sherwood products including injectors, ejectors, oil pumps, flue cleaners—a complete line of power plant equipment ranging from fusible plugs to grease cups.

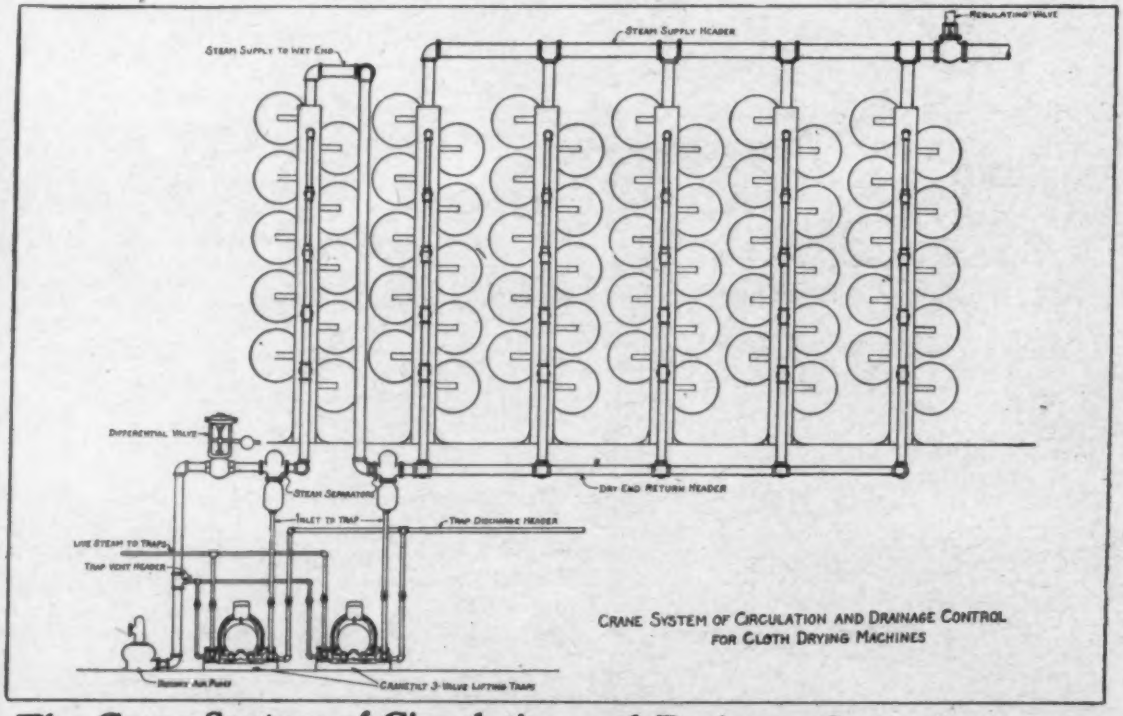
Write your name and address on the margin of this page. Forward it to us, and we will send the Sherwood Book to you by return mail.

SHERWOOD
ENGINEERING-SPECIALTIES

Are Your Dryers Free

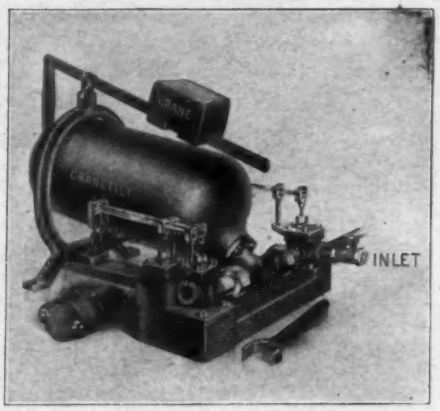
The presence of water and air in the dryers of a cloth drying machine reduces the output of cloth and lowers the quality of the product.

The maximum drying effect of a drying cylinder can be obtained only if the entire inner surface is in direct contact with the steam. If the steam is kept from a portion of the surface by air or water, the efficiency of the dryer is reduced in proportion to the surface so insulated.



The Crane System of Circulation and Drainage Control (Patented.)

# of Water and Air?



Cranetilt 3-Valve Lifting Trap

Crane Horizontal Steam Separator

It is essential that drainage be continuous. Intermittent drainage causes an alternate heating and cooling of the dryers, which results in an unevenly dried and greatly weakened product.

The Crane System of Circulation and Drainage Control assures constant drainage by maintaining at all times a constant drop in pressure between all the dryers and the return header of the machine.

Under this system each dryer operates at its maximum efficiency all the time, which results in the maximum production of cloth with the smallest consumption of steam.

We are manufacturers of about 20,000 articles, including valves, pipe fittings, and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors of pipe, heating and plumbing materials.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, HARLEM, BROOKLYN, ALBANY, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI, INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED

MONTREAL, TORONTO, VANCOUVER, WINNIPEG, CALGARY, REGINA, HALIFAX, OTTAWA, LONDON, ENG.

WORKS: CHICAGO AND BRIDGEPORT

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

CHICAGO

The Test Method in Buying Circulation

Not bulk alone, but heat units, is what the scientific coal buyer demands.

The same problem confronts you when you begin to buy white space.

In addition to net paid circulation you want to know about where the publication circulates; what is paid for it; how its readers regard it; the purchasing power of its readers; and its influence.

Audit Bureau Circulation Reports give you most of this information in carefully audited figures and statements. That is why a study of A.B.C. reports pays.

If you take the Publisher's Statement, the Auditor's Report and a copy of the publication and examine them thoroughly, you'll find that space buying is simplified, because the information contained in A.B.C. reports is accurate and informative.

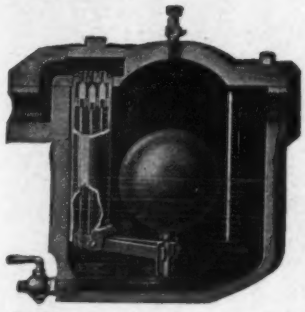
You get a mental picture of the publication, its subscribers, and the people it serves.

The safest and sanest test when you are thinking of buying white space.

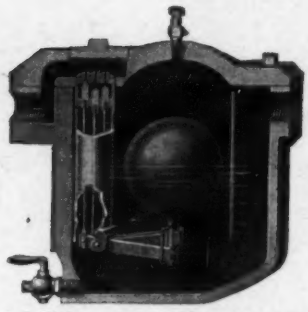
COTTON is a member of the A.B.C. We welcome comparison of circulation facts. We are glad to supply Publishers' Statements or Audit Reports upon request.

Audit Bureau of Circulations

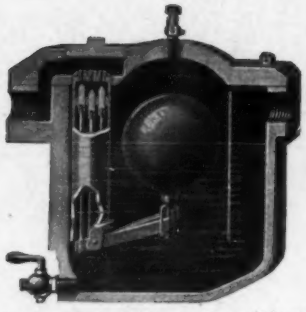
202 South State Street Chicago • 347 Fifth Avenue New York



Showing position of No. 1 Valve handling normal conditions



No. 2 Valve opens wide when the flow exceeds capacity of No. 1 Valve



Then No. 3 Valve opens, giving emergency capacity of trap

HOW THE WRIGHT "EMERGENCY" HIGH PRESSURE STEAM TRAP OPERATES

Three steam-tight valves are located at the highest point of the trap, where they are entirely removed from accumulations of grit, scale, sediment, etc., which prevents excessive wear.

At low water level, the outlet tube and valves are sealed in from four to six inches of water which prevents any possible escape or waste of steam. As the condensation enters the trap, the float rises, opening the three valves in succession. One valve only is required to handle the ordinary volume of condensation—the other two valves are in reserve for emergencies.

The action of the trap in emergencies is instantaneous, a feature which renders it invaluable for many uses. The discharge from each of the three valves being continuous, is very great—much greater than is possible with an intermittent trap.

Drains Steam Heated Machinery Automatically Without Steam Waste

Because it insures a constant supply of dry steam the Wright "Emergency" 3-Valve High Pressure Automatic Steam Trap has been found invaluable for increasing the efficiency of steam heated machinery in textile mills, rubber mills, chemical plants, brick and wood-working plants, sugar factories, laundries and a hundred other manufacturing and industrial plants.

The Wright Trap drains automatically and continuously all accumulated condensation from steam pipes and does it without steam waste.

The Wright "Emergency" Trap is instantaneous and positive in action under both normal and emergency conditions.

The 3-valve feature of the Wright "Emergency" Trap makes it suitable for pressures varying from 10 to 200 pounds per square inch without requiring a change of valves or any part. The same feature enables the trap to take care of larger quantities of discharge than ordinary traps—and to take care of all emergencies.

Let us send you complete information regarding Wright - Austin Steam specialties—including the "Victor" Low Pressure Automatic Steam Trap, which is designed and built for operation under pressures up to 20 pounds.

Write for Catalog Today

WRIGHT-AUSTIN COMPANY

Detroit, U. S. A.

Branch Offices: New York Chicago Boston
Export Office: 30 Church Street, New York City
Representatives Everywhere

(19)

WRIGHT-AUSTIN

The Man With The Shovel Knows The Difference

Fuel saving, following installation of the Morehead Back-to-Boiler System is evident to the man in the boiler room. It is also evident to the man in the front office who pays the bills.

The average saving in textile mills throughout the country where there are Morehead installations, is 20 per cent—an important consideration to the textile manufacturer who must reduce his production costs to a minimum to compete in a buyers' market.

And while fuel costs are lowered, the Morehead Back-to-Boiler System speeds up manufacturing operations. It drains steam-heated surfaces of all condensation as it forms and keeps the apparatus at top-most efficiency.

Let us refer you to textile manufacturers in your vicinity who have lowered their fuel bills—increased their production, with the Morehead Back-to-Boiler System. Write for catalog.

Morehead Manufacturing Company
Detroit, Mich.

Canadian Morehead Manufacturing Co., Woodstock, Ont.
For Dominion of Canada

(15)

Positively Drains All Types of Steam Apparatus

Delivers Condensation And Feed Water to Boiler Under All Conditions at Maximum Temperature

Morehead

"BACK-TO-BOILER-SYSTEM"

Ask The Man In The Boiler Room

Ask the engineer in a boiler room—where the Morehead Back-to-Boiler System returns the condensation ready to be used again and again—about the fuel-saving.

Ask the engineer about increased efficiency of steam-heated equipment—as a result of the draining of all condensation from steam-heated surfaces by the Morehead System. You will find that fuel bills are reduced 20 per cent—and that production is often increased 50 per cent.

After you have investigated the Morehead System—read the unsolicited testimonial letters from engineers and textile manufacturers which we will gladly send you and you will become aware of the fact that you pay for the Morehead System whether you buy it or not.

Scores of textile manufacturers have told us that their reduced fuel bills have paid for the Morehead System during the first few months' operation.

Morehead Manufacturing Company
Detroit, Mich.

Canadian Morehead Manufacturing Co., Woodstock, Ont.
For Dominion of Canada

(15)

The "Morehead" Return Trap.

Positively Drains All Types of Steam Apparatus

Delivers Condensation And Feed Water to Boiler Under All Conditions at Maximum Temperature

Your Fuel Bills are Less

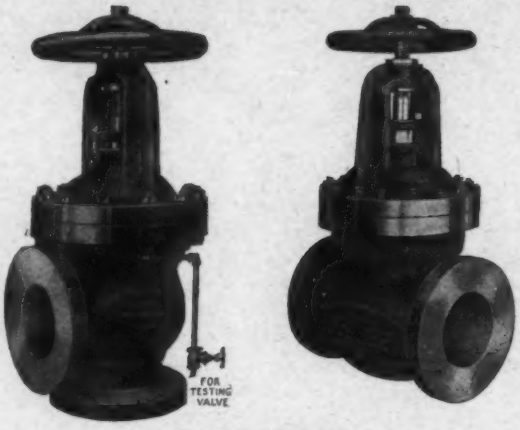
Morehead

"BACK-TO-BOILER-SYSTEM"

The U. S. Steel Corporation
Took No Chances!

This leader in American Industries made sure that its plants were made safe and protected against needless shutdown from the back flow of steam by equipping them with

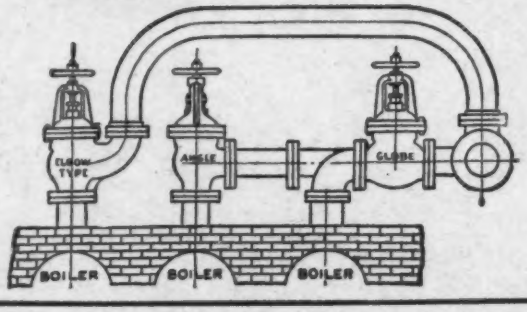
1997
Golden-Anderson Life and Property Insurance Valves



The decision was not reached by mere accident, guesswork or favoritism, but is the gratifying result of the most searching engineering tests extending over long periods, and in which the best competing makes were represented.

THESE GOLDEN-ANDERSON PATENTED AUTOMATIC DOUBLE-CUSHIONED TRIPLE-ACTING AND NON-RETURN VALVES ARE THE ACME IN MODERN VALVE CONSTRUCTION. THEY WORK "BOTH WAYS" AND GIVE PROTECTION AGAINST REVERSAL OF STEAM FLOW TO THE ENTIRE PLANT.

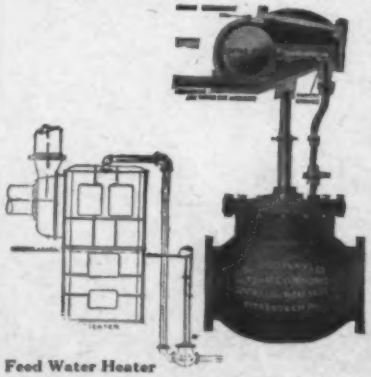
1. Automatically cut out a damaged boiler and prevent complete shutdown.
2. Automatically shut off steam from every boiler when steam pipe explodes.
3. Automatically equalize pressure between all boilers.
4. Make it impossible for steam to enter a cold boiler.
5. Can be tested from boiler room floor.
6. Supreme in reliability and simplicity.
7. Double Cushioned by internal Corliss dash pot. No pounding, sticking or chattering.



"No shut-down when a tube bursts"

Golden-Anderson Pat.
Automatic Cushioned Controlling Float Valves

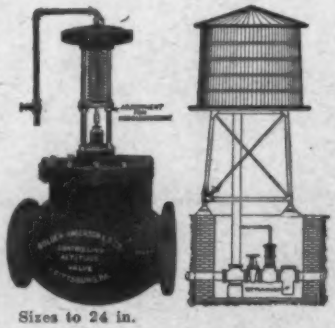
1. They carry a constant water level in feed water heaters by perfectly controlling the flow of make-up water.
2. Operated by protected enclosed copper float.
3. Cushioned by both air and water.
4. Operate without hammering, sticking or chattering. No metal-to-metal seats.
5. Made angle or straightway.



Feed Water Heater

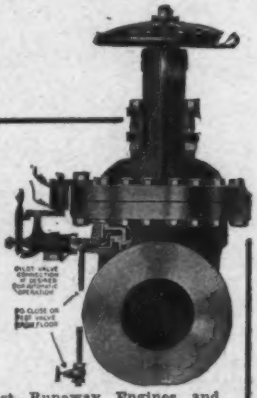
Automatic Cushioned Controlling Altitude Valves

1. Eliminate loss of water in reservoirs, standpipes, tanks, etc., by keeping the level constant.
2. Operate without float or fixtures.
3. Uninterrupted service and a positive water supply assured without danger of water hammer surges or burst mains.
4. No metal to metal seating. Positively cushioned by water and by air.
5. Can be made to close automatically during fire service.
6. Can be controlled by water or electricity from distant points.



Sizes to 24 in.

Golden-Anderson
Cushioned Throttle and Automatic Engine Stop Valves



Provide Against Runaway Engines and Disastrous Accidents

Features:

1. Automatically operated by overspeeding engine.
2. Electrically operated from distant points.
3. Emergency tripped from small branch pipe connection.
4. Hand operated by hand wheel.
5. Double cushioned by Corliss dash pots—positively no hammering or pounding.
6. Double extra heavy throughout—practically indestructible.

Suitable for any pressure—no adjustments.

Golden-Anderson Valve Specialty Co., 1230 Fulton Bldg., Pittsburgh, Pa.

A Complete Cycle

IN THE OIL INDUSTRY there are a few concerns who are what is termed "A Complete Cycle."

The Texas Company is one of them.

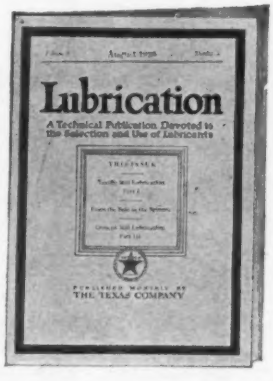
Let us explain what this signifies specifically and just what it means to you.

It means that we do our own producing, we own and operate our own pipe lines, refineries, steamships, tank cars, terminals, barrel factories, distributing stations, warehouses, etc.

It means that from the time the crude comes from the ground until it is delivered to the purchaser, it does not leave our hands.

It is not necessary to stress the importance of this in insuring steady, uniform, dependable delivery.

For this and other reasons an increasing number of power users and power producers are employing Texaco Lubricants and Texaco Service to keep down operating expense through efficient lubrication.


Lubrication
A Technical Publication Devoted to the Selection and Use of Lubricants
PUBLISHED MONTHLY BY THE TEXAS COMPANY

There is a Texaco Lubricant for Every Purpose

Get "Lubrication" *free*

In this magazine we print month after month, articles covering the problems of lubrication as applied to various industries. These articles are not theoretical, but based on practical operating experience.
We shall send "Lubrication" to Engineers, Executives, Buyers of Lubricants, and others, who are professionally interested and who ask for it—FREE—

-CLIP THIS COUPON-

THE TEXAS COMPANY

Dept. O, 17 Battery Place, New York City

NEW YORK HOUSTON CHICAGO

Offices in Principal Cities

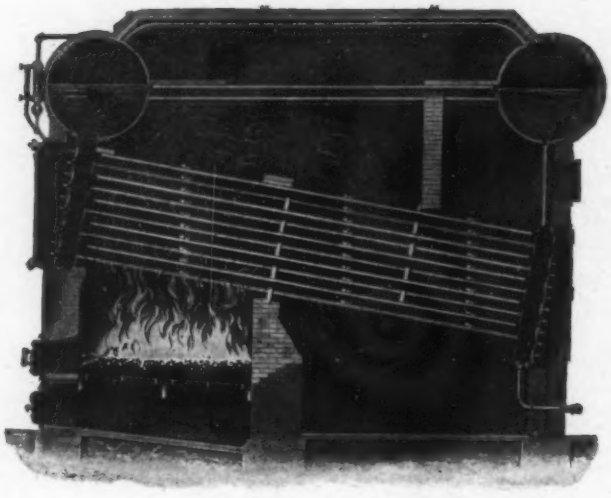
Kindly put my name on your free mailing list for "LUBRICATION."

Name _____ Street _____

City _____ State _____

5-21

A Boiler That Saves Your Coal Pile



HERE'S a perfect water-tube boiler—a boiler that will generate more steam with less fuel—and do it steadily without shut-downs for repairs.

Rapid, unrestricted circulation is absolutely necessary to the efficiency of any boiler, and while this feature is claimed by many boiler manufacturers, the design of this boiler is such that it is positive at all times.

Large overload capacity, dry steam generated, and the remarkable flexibility in meeting fluctuating demand, particularly adapts this boiler to severe conditions in the textile mill or any industrial plant.

Greater economy is assured because of the positive circulation, and because of the vertical baffling which assures better heat absorption and easy cleaning.

Less Scaling because of the feed water purification feature.

Patented throat connection gives a very large passage from the header into the drum without weakening the shell of the latter.

Fewer repairs because all expansion and contraction is taken care of—all tube surfaces run in one direction and all plate surfaces in another.

In short, this is the perfect boiler—an investment instead of an expense.

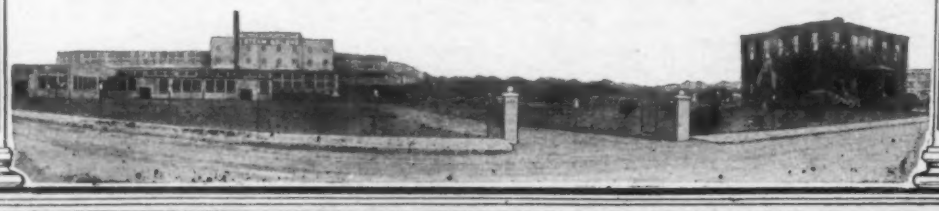
Write today for full information.

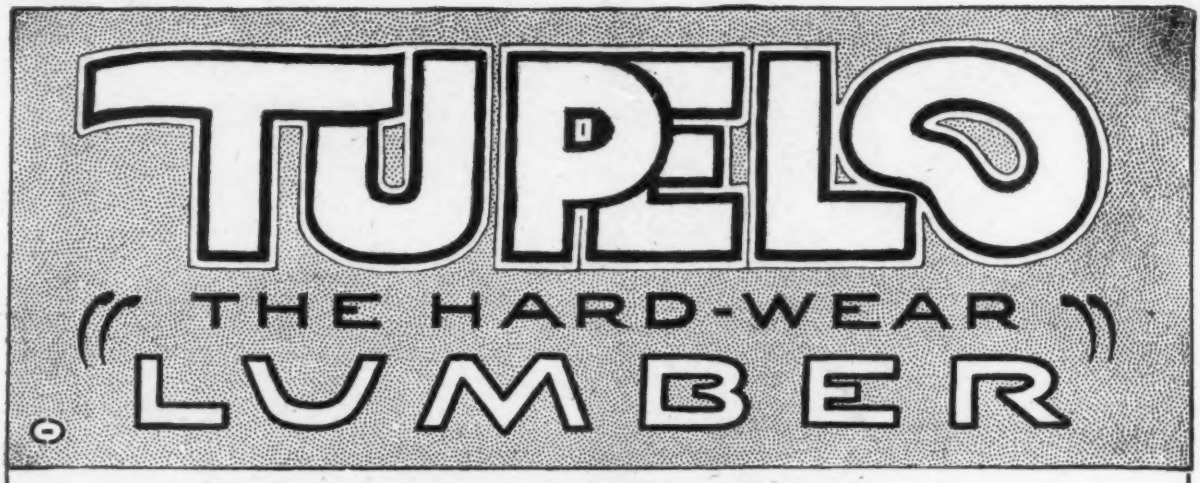
INTERNATIONAL ENGINEERING WORKS, Inc.
FRAMINGHAM, MASS.

Southern Representative,
Isaac Hardeman, Charlotte, N. C.

BOSTON
PHILADELPHIA

NEW YORK
SAN FRANCISCO





Tramp! Tramp!! Tramp!!!

go the feet on a TUPELO FLOOR, and that floor seems to—and actually does—grow smoother, because of Tupelo's "involved" or closely "knitted" grain which prevents slivering or splintering and *reduces the wearing.*

Roll! Roll!! Roll!!!

go the truck wheels over the TUPELO FLOOR in a Textile Mill, a Warehouse or on a Platform where the wear from truck wheels is constant and severe. These are the uses where

Tupelo Stands the Gaff

and refuses to wear down—or out.

Tupelo is *Made* for Hard Wear

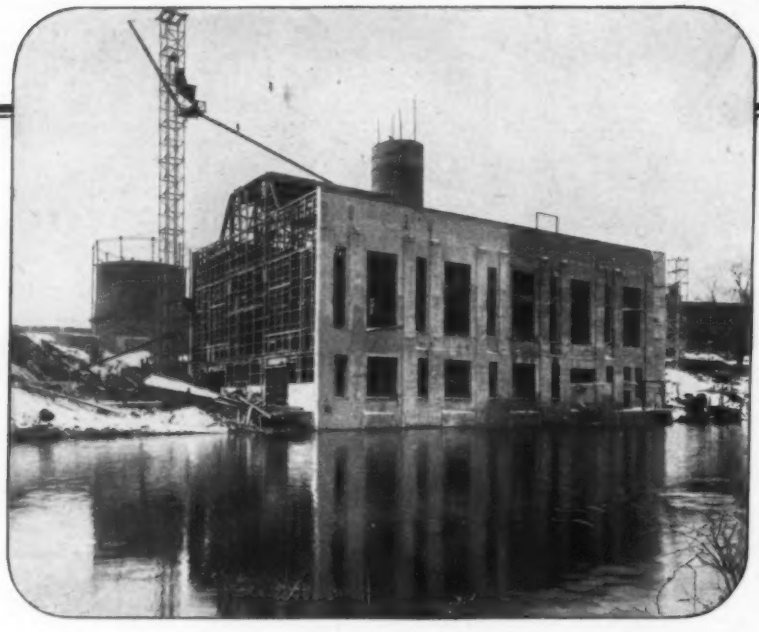
If you're going to lay a floor, or have one laid, you want the whole "TUPELO tale." We know it "by heart" and will be glad to tell it.

Will you kindly write and ask for the particulars? Address,

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION

805 Perdido Building, New Orleans, La., or 805 Heard Building, Jacksonville, Florida

(Please address office nearest you)



Building with Foresight

THE Great Falls Manufacturing Company's mill at Somersworth, N. H., is the development of nearly a century. The problems of adapting the plant to changing conditions were as numerous as might be expected in a plant of such age.

Lockwood, Greene & Co., Engineers, recently devised for the owners a logical method of meeting the probable demands for more space. A definite, logical building programme was prepared. The plan, which is to cover an extended period of years, through its successive steps will produce the greatest manufacturing economy with the least financial outlay. The final result will be one of the largest cotton mills under one roof in the world.

The long experience of Lockwood, Greene & Co. in the textile field enables their clients truly to build with foresight. The organization service that is rendered is comprehensive, from the forming of preliminary plans to the overseeing of the construction.

If you are contemplating building it would be to your advantage to get in touch with our nearest office.

©
BUILDING
WITH FORESIGHT

LOCKWOOD, GREENE & CO.

ENGINEERS

BOSTON ATLANTA CHICAGO NEW YORK
DETROIT CLEVELAND CHARLOTTE PHILADELPHIA

SANTIAGO, CHILE

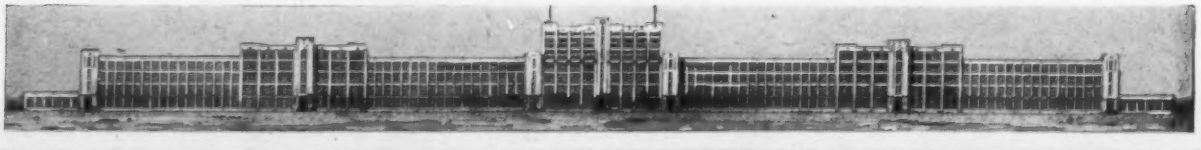
LOCKWOOD, GREENE & CO. OF CANADA, LTD., MONTREAL, P. Q.
COMPAGNIE LOCKWOOD GREENE, PARIS, FRANCE

Approximately one third of the building plan of the Great Falls Manufacturing Company is to be finished at once. The accompanying photographs show a part of the work already done. On the opposite page is shown the power house in process of completion.

©

BUILDING
WITH FORESIGHT

Below is the architect's perspective of the future development of the Great Falls Manufacturing Company, as it will look when completed.



THE FUNCTIONS OF THE ENGINEER

Anticipating Future Expansion Requirements by Planning Now

It is evident that the buying tide has turned in many industries and while it is far from the high point to which it must return, the time is ripe for the manufacturer to lay his plans for future growth.

By starting his Engineer now, his plans can be matured carefully and thoroughly. Then when the time has arrived for alterations, improvements or additions to his mill, factory or plant, everything will be ready for quick action.

This development of plans by his Engineer will give him a distinct advantage over competition when the growing market calls for expansion.

The longer in advance plans are made the more careful thought and study the manufacturer and his Engineer can devote to the problems that will confront him in the next few years.

Anticipating the future needs of industry is part of the task of the Engineer.

These phases of Engineering as affecting the Textile Industry are discussed in "Picks to the Minute." Write for your copy.

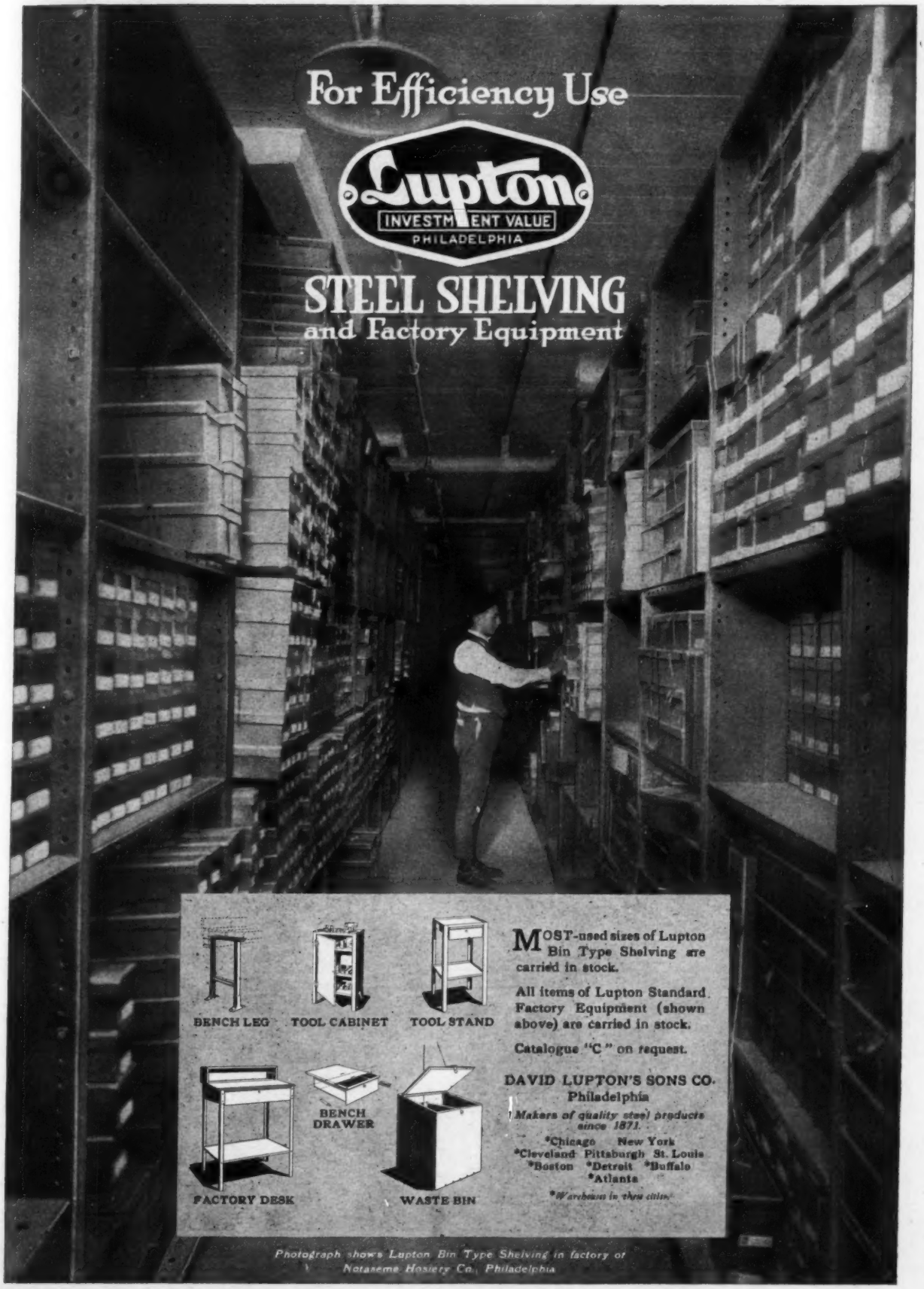
J. E. Sirrine & Company

Engineers

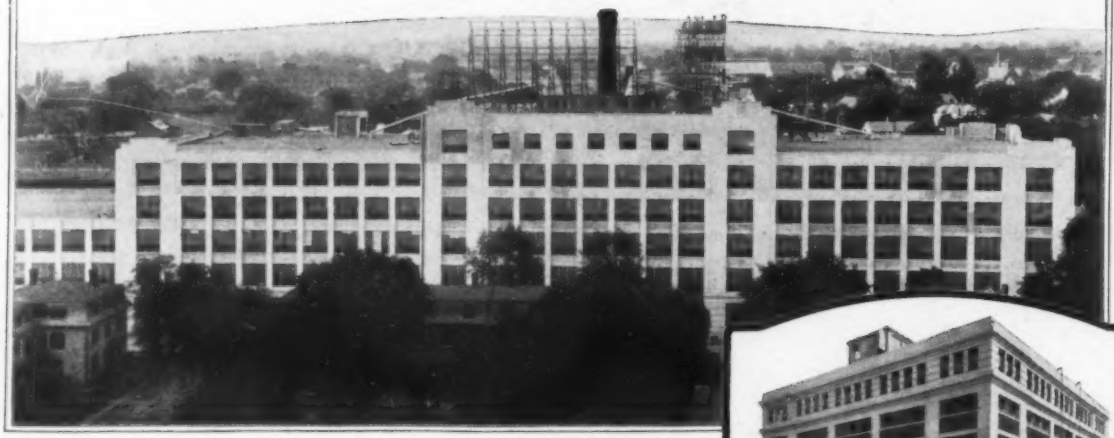
Greenville
South Carolina

Farm Bureau Bldg.
Dallas, Texas

S
SERVICE


For Efficiency Use
Lupton
INVESTMENT VALUE
PHILADELPHIA
STEEL SHELVING
and Factory Equipment
BENCH LEG
TOOL CABINET
TOOL STAND
MOST-used sizes of Lupton Bin Type Shelving are carried in stock.
All items of Lupton Standard Factory Equipment (shown above) are carried in stock.
Catalogue "C" on request.
DAVID LUPTON'S SONS CO.
Philadelphia
Makers of quality steel products since 1871.
*Chicago New York
*Cleveland Pittsburgh St. Louis
*Boston *Detroit *Buffalo
*Atlanta
*Warehouses in these cities
BENCH DRAWER
FACTORY DESK
WASTE BIN
Photograph shows Lupton Bin Type Shelving in factory of Nataseme Hosiery Co., Philadelphia

WindoWalls In Textile Mills



Nashua Manufacturing Company
Nashua, N. H.

Lockwood Greene & Co., Engineers
Aberthaw Construction Co., Contractors

American Woolen Co.
Lawrence, Mass.

W. B. Knowlton, Archt. & Eng.
Turner Construction Co., Con.

Fenestra Fills Needs of New England Mills

For the cold New England winters, Fenestra engineers have designed WindoWalls that reduce condensation to a minimum—and while admitting plenty of light and ventilation, give protection against wind, rain and snow.

Just recently, the Nashua Mfg. Co., built the Jackson Mills, at Nashua, N. H. As in other leading New England Mills, WindoWalls—because of their daylighting, ventilating and protective advantages, are used. That Fenestra is widely used by leading textile manufacturers such as the Nashua Mfg. Co., indicates the prestige it has in the textile field.

For example, there are the Lowell Weaving Company, American Woolen Company, Sanford Mills and Massachusetts Cotton Mills; who have used Fenestra—not once—but repeatedly in their New England Mills.

There are sales and engineering offices in the principal cities—and conveniently located warehouses in Boston and New York City to assure prompt shipment and a satisfactory installation for New England builders.

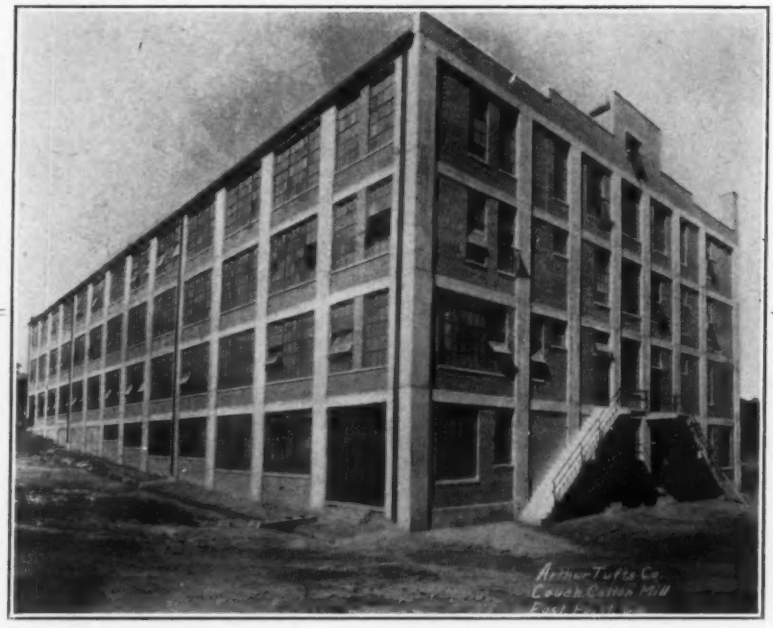
Detroit Steel Products Company
4444 East Grand Boulevard, Detroit, Mich.
Canadian Metal Window & Steel Products, Limited, Toronto, Canada

Fenestra
Steel WindoWalls

Sidewall Sash Continuous Sash Counterbalanced Sash
Underwriter's Labeled Sash Mechanical Operators

Among the many mills in New England that are daylighted and ventilated by Fenestra WindoWalls are included:

Arkwright Mills	*Fall River, Mass.*
American Thread Co.	*Fall River, Mass.*
American Woolen Co.	*Boston, Mass.*
Atlantic Mills	*Providence, R. I.*
Andrew Mill	*Woonsocket, R. I.*
Black Cat Textiles Co.	*Bennington, Vt.*
Sidney Blumenthal Co.	*Shelton, Conn.*
Connecticut Mills	*Danielson, Conn.*
Cascade Mills	*Berlin, N. H.*
Carl Stoka Silk Co.	*Hyde Park, Mass.*
Durfee Mills	*Fall River, Mass.*
Everlastik Co.	*Chelsea, Mass.*
Goetz Silk Mfg. Co.	*Holyoke, Mass.*
Goodall Worsted Co.	*Sanford, Me.*
Goodyear Cotton Mills	*Killingly, Conn.*
Goodyear Cotton Mills	*Goodyear, Conn.*
Holliston Mills	*Norwood, Mass.*
International Textile Co	*Bridgeport, Conn.*
Kerr Mills	*Fall River, Mass.*
Kennebunk Mills	*Kennebunk, Me.*
Lancaster Mills	*Clinton, Mass.*
Lowell Bleachery	*Fall River, Mass.*
Merrimac Mills	*Methuen, Mass.*
Mass. Cotton Mills	*Lowell, Mass.*
Pantan Mills	*Plymouth, Mass.*
Sanford Mills	*Sanford, Me*
Stark Mills	*Manchester, N. H.*
W. E. Tillotson Mfg. Co.	*Pittsfield, Mass.*
Worsted Woolen Mills	*Boston, Mass.*
Woolen Mfg. Co.	*Pittsfield, Mass.*



This is the new home of Couch Cotton Mills at East Point, Ga. Ensley and Ala. City basic slag were used exclusively in this modern, fireproof slag-concrete structure, which is 4 stories high,, 100 ft. wide and 210 feet in depth. Arthur Tufts Co. (Atlanta) Contractors

Another "concrete" example of modern industrial construction with

"ENSLEY" & "ALA CITY"
BASIC SLAG
CRUSHED & SCREENED

For permanence—and for protection against fire, vermin and wear—modern industry turns to reinforced slag concrete. The handsome home of the Couch Cotton Mills is no exception.

P. S. It's downright hard to find a bangup "concrete" job that doesn't acknowledge its indebtedness to the unusual qualities of this "superior mineral aggregate."

Prompt shipments at favorable delivered prices to all points in the Southeastern States. Wire or write. : : : :

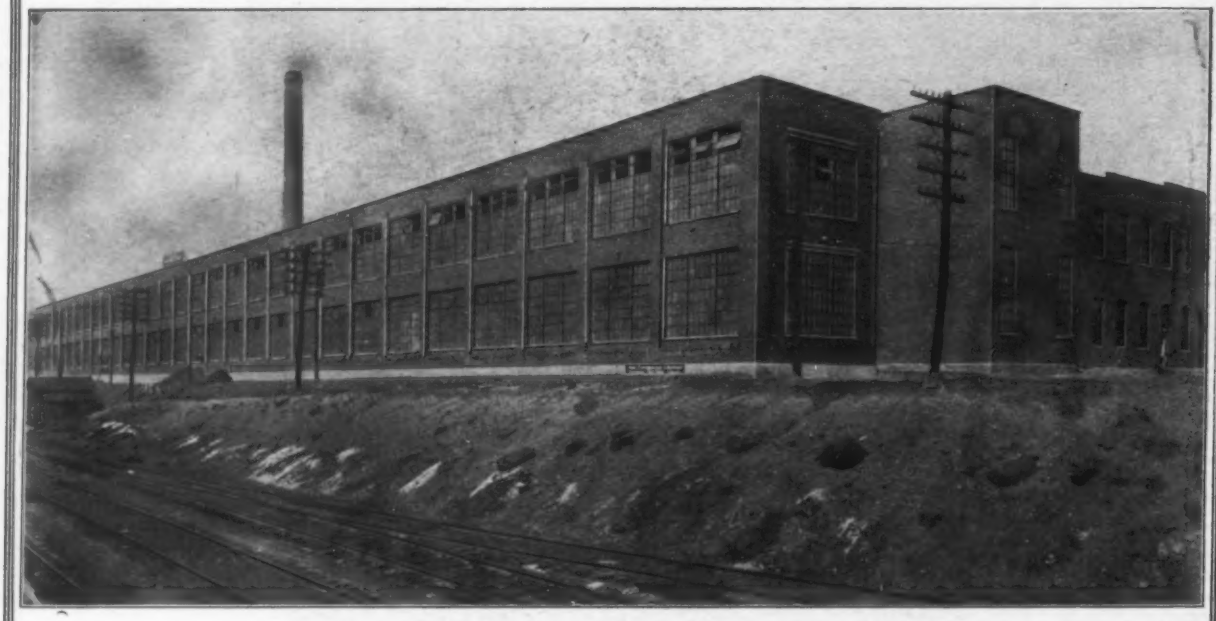
BIRMINGHAM SLAG CO.

"Slag Headquarters"

Two Big Plants:
ENSLEY, ALA.
ALA. CITY, ALA.

BIRMINGHAM, ALA.

Branch Sales Offices:
ATLANTA, GA.
THOMASVILLE, GA.



Silk Mill Recently Completed by the Foundation Company.

We have several experienced organizations now available for similar work.

SCOPE

Mills, Warehouses, Industrial Plants, Industrial Buildings, Power Plants, (Steam and Hydro-Electric) Dams, Mine Shafts, Bridges, Railroads, Harbour Works, Caisons, Piling, Etc.

THE FOUNDATION COMPANY

CITY OF NEW YORK

ATLANTA
NEW ORLEANS
CHICAGO
PITTSBURGH
DETROIT

SAN FRANCISCO
SEATTLE
VANCOUVER

MONTREAL, CANADA
PARIS, FRANCE
LIMA, PERU
HAVANA, CUBA
TAMPICO, MEXICO

MILL WHITE PAINT

For Progressive Mills

Mill White will not yellow, flake off, or collect dirt. It may be washed like tile and withstands the vibration of the heaviest machinery.

Three Finishes
Flat, Eggshell and Gloss

Can be brushed or sprayed.

Manufactured by

The Patterson-Sargent Company

New York Cleveland Chicago St. Paul Kansas City

DEGRACO PAINTS
ALL COLORS FOR ALL PURPOSES

What's Back of the Paint You Buy?

You can buy house paint at many different prices, but you get just what you pay for—nothing more.

It's a safe statement to say that every industry maintaining employees houses has had experience with low grade paint.

Paint that has nothing back of it to recommend it but a low initial price is a paint that you will be disappointed in after it has been in service on your buildings two or three months. High quality paint of proven merit, on the other hand, is always the best investment in the long run.

You are safe in selecting ***Degraco House Paints.*** Your judgment is backed by service records in the textile field which assure maximum durability and low ultimate cost and by the reputation of Detroit Graphite Company as makers of good paint for thirty years.

Degraco House Paints are furnished in all colors. They can be used without the hazard of experiment.

Use ***Degraco House Paints*** outside
Degraco Gloss Colors inside

Detroit Graphite Company

Makers of
Paints in all Colors for all Purposes

532 Twelfth St. Detroit, U. S. A.

Sold through Branch Offices with Warehouse stocks in all Principal Cities

Mfd. in Canada by Dominion Paint Works, Ltd., Walkerville, Ont.

(58)

Sta-White—*a pure white, light-reflecting oil paint for industrial interiors. It stays white. The mill white you can rely upon.*

Superior Graphite Paint—*a protective coating for structural steel, bridges, metal roofs, stacks and all metal surfaces.*

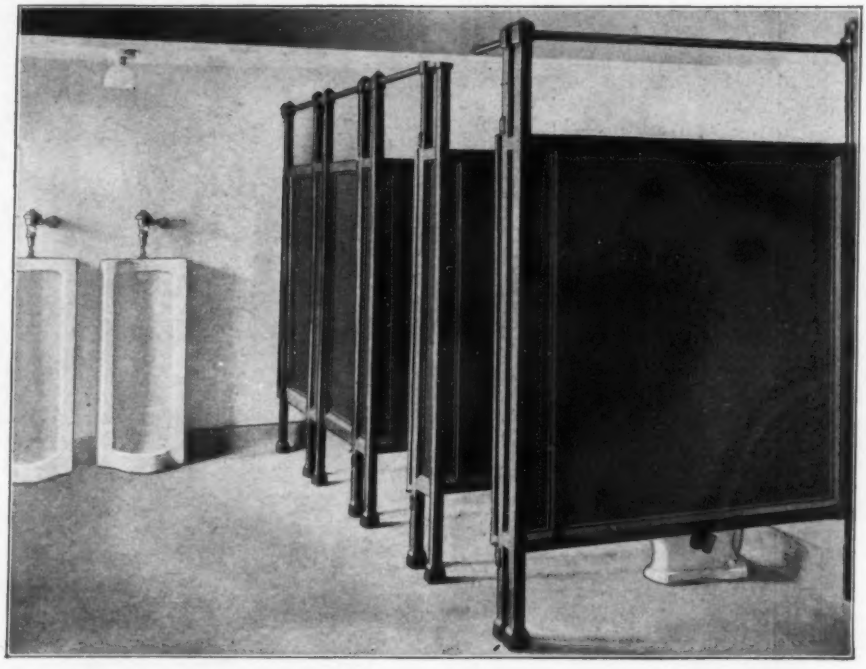
Degraco Paints and Enamels *are made in all colors for use on interior and exterior surfaces, for every service requirement.*

Degraco Brick and Concrete Paints—*for interiors and exteriors. Concrete Walls, Floor Paint, Floor Hardener, Damp-proofing.*

Degraco-Tone—*an oil paint in flat finish for interior use on plaster walls, woodwork, wall board, concrete, tile, metal ceilings.*

DEGRACO PAINTS

All Colors for All Purposes



SANYMETAL in service, typical of many installations in Southern Cotton Mills.

Sanymetal
TRADE MARK U. S. REG.

Toilet Partitions —*proved leadership*

ONE of the things that has enabled SANYMETAL to prove its leadership has been our pride in making it—regardless of time and trouble—as good as it could be made.

We designed it for neatness and cleanliness, without dirt-catching cracks and crevices, and we finish it with baked-on enamel to keep it so.

We put good material into it—rust-resisting Armco Iron. It will outlast your mill.

We have made its smallest details for durability. Every bolt, hinge and base-casting is electro zinc plated.

We make SANYMETAL in complete electrically welded units, so it is easy to set up.

And on all doors we put SANYMETAL Gravity Rolled Hinges, the original only patented gravity roller hinge.

Sanymetal
TOILET PARTITIONS
TRADE MARK U. S. REG.

are proving their leadership in hundreds of large manufacturing plants and important public buildings all over the country.

It will be worth your while to send for the SANYMETAL catalog.

THE Sanymetal
TRADE MARK U. S. REG.
PRODUCTS COMPANY
980 East 64th Street - Cleveland, Ohio.

Von Duprin

Self-Releasing Fire Exit Latches

Specify—
Von Duprin
Self - Releasing Fire Exit Latches, as approved by the Underwriters' Laboratories (Inc.) of the National Board of Fire Underwriters:
Report No. S. A. 163; Guide No. 100-F 24.

The Vital Factor

BECAUSE safety is of first importance in any building which is to house human beings, most large buildings are of fireproof construction, in spite of its greater cost.

Yet frequently the inmates of the buildings are without the slightest protection against loss of life or limb through panic, even though Von Duprin Self-Releasing Fire Exit Latches, the best known protection against panic disasters, are an insignificant item in the cost of the building.

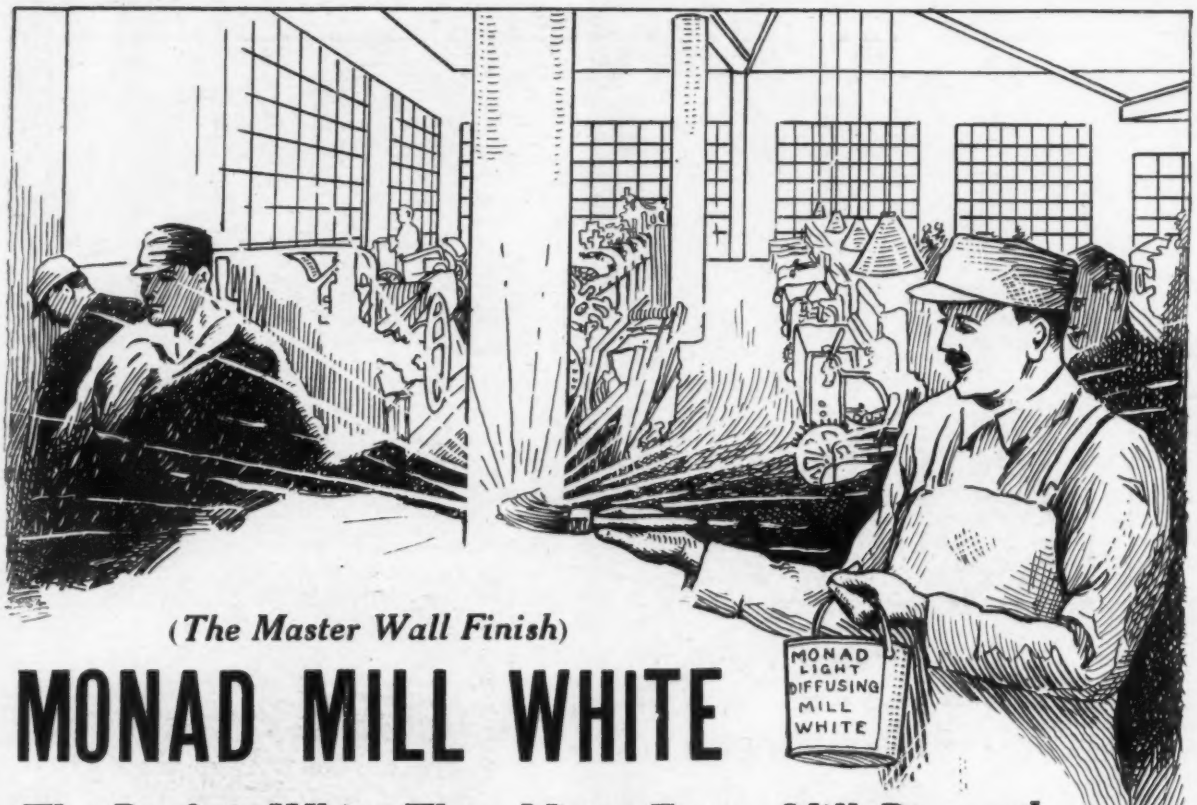
Dollar for dollar, Von Duprin latches add more to the safety of the inmates of your building than anything else that goes into it.

In case of panic, the mere touch of hand or body on any Von Duprin latch instantly releases the door and opens the way to safety.

Let us send you Catalog 12-T, and the interesting booklet, "Saving Lives."

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Samuel Cupples School,
St. Louis, Mo.
R. M. Milligan, Architect



(The Master Wall Finish)

MONAD MILL WHITE

The Perfect White That Meets Every Mill Demand

Our many years of experimenting has resulted in a more perfect and economical mill white, and textile mills are finding it the most efficient reflecting and light diffusing coating they have ever tried. They find that it stays whiter, lasts longer, is more sanitary and lasts but not least more economical, as *one coat is all that is necessary on previously white painted walls.*

MONAD MILL WHITE will not crack, peel, drop or rub off. It is sanitary—can be washed without injury. Its covering capacity is exceptional, requiring less coats than any other white paint regardless of the kind of surface to be covered. *SATISFACTION AND ECONOMY GUARANTEED.*

Made in Pure White High Gloss, Eggshell and Flat Finishes. ALWAYS SPECIFY "MONAD" when buying mill white paint.

Other Equally High Grade Products Especially Recommended for Textile Mills:

MONAD READY MIXED HOUSE AND VILLAGE PAINTS—always reliable as well as economical.

RUBBERITE SPAR VARNISH—The waterproof, weather-proof varnish that won't turn white, scratch, scar or mar. The price is reasonable.

CHISFIN ANTI-CORROSIVE PAINT—Specially designed for protecting metal surfaces of all kinds under all conditions.

Full information and prices on MONAD Mill White or our other products gladly furnished on request.

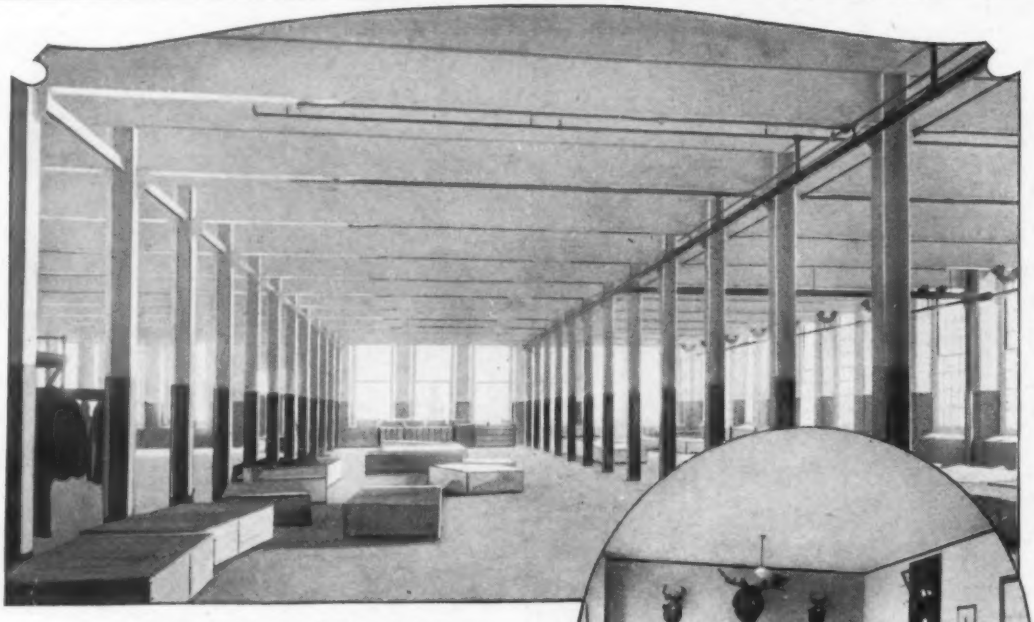
ATLANTIC DRIER & VARNISH CO. PHILADELPHIA — THE BRAND OF EFFICIENCY — MONAD BRAND

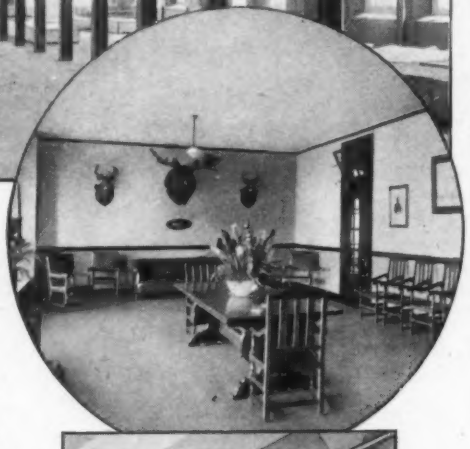
ATLANTIC DRIER & VARNISH CO.

Philadelphia, Pa.

This trade-mark is a guarantee of perfect satisfaction when buying paints of any kind.

Southern Representative:
R. A. SHERFESSEE,
20 Rutledge Ave.,
Charleston, S. C.





In Buying Daylight Quantity Determines Quality

A Message to Executives

WHEN buying a mill white, the chief consideration is the amount of daylight that it will reflect inside your workrooms. Dixielite attracts the maximum of light, and distributes it evenly to the furthest and darkest corners.

This is because Dixielite is white. Not a near white, but a pure, rich white that will not discolor or grow dim with time. For Dixielite is the longest-wearing mill white that you can buy.

It dries with a hard finish that will not chip, crack, or peel. It is washable. Soap and water keep it brilliantly new.

Dixielite is a product with over seventy years of paint-making experience back of it. Its superiority has been proved by thousands of executives.

It is the perfect white finish for walls and ceilings of mills, factories, and warehouses. Dixielite comes in flat, semi-gloss and gloss finishes. Complete information about Dixielite is contained in our Booklet "Keeping in the Spotlight" No. 51. Will you write for it today?

WADSWORTH, HOWLAND & CO., Inc.
Paint and Varnish Makers
BOSTON, MASS.

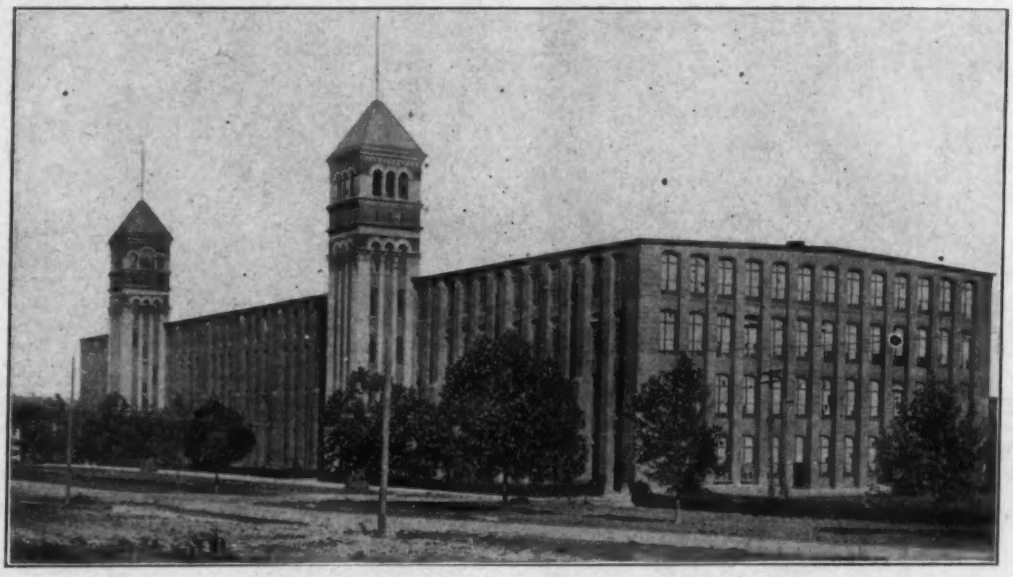
New York Office
Architects' Bldg.

Philadelphia Office
1524 Chestnut Street

DIXIELITE

THE BAY STATER

"Painted by Marshall"



Olympia Mill, Columbia, S. C.

Painting Without the Fuss and Trouble

Put Your Mill In Shape for Capacity Production

Many a mill man has postponed the painting of his mill and village because he dreaded the "fuss and trouble."

We take this responsibility entirely off your shoulders. Our corps of painters has so systematized and perfected the painting of mill interiors, that they do their work without injuring goods in process or in any way interfering with production.

We are prepared to paint entire mill villages, handling all repairs under one general contract.

We invite your investigation of our work and offer you here the names of a few clients:

INDIAN HEAD MILLS	Cordova, Ala.
HOGANSVILLE MFG. CO.	Hogansville, Ga.
LA GRANGE MILLS	La Grange, Ga.
DUNSON MILLS	La Grange, Ga.
BELLWILL MILLS	Wilmington, N. C.
WINNSBORO MILLS	Winnsboro, S. C.
WATEREE MILLS	Camden, S. C.
LANCASTER MILLS	Clinton, Mass.
LAWTON MILLS	Plainfield, Conn.
BAY STATE COTTON CORP.	Lowell, Mass.
OLYMPIA MILLS	Columbia, S. C.
CAPITAL MILLS	Columbia, S. C.
RICHLAND MILLS	Columbia, S. C.
MANDEVILLE MILLS	Carrollton, Ga.
DIXIE MILLS	La Grange, Ga.
GRANBY MILLS	Columbia, S. C.
KEOKUK POWER STATION	Keokuk, Iowa
SAVANNAH POWER CO.	Savannah, Ga.

One of our engineers will gladly call and go over your paint problems, with no obligation on your part.

Wherever you are located, we invite your inquiries. We are doing work in all parts of the country.

H. Newton Marshall Company

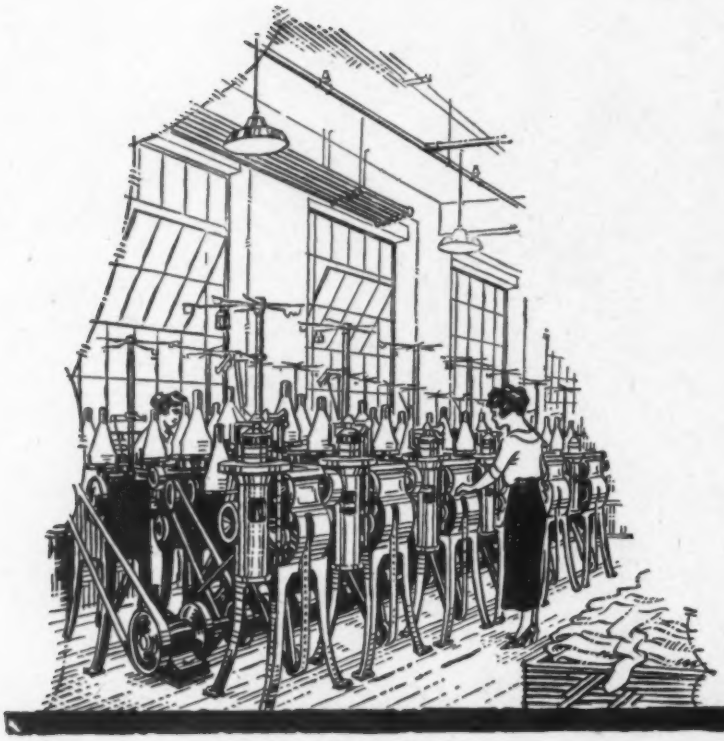
Painting Contractors

Trust Co. of Ga. Bldg.
ATLANTA, GA.

522 Harrison Avenue
BOSTON, MASS.

OJACO

MILL·WHITE



HOSIERY sale! Factory seconds at reduced prices! In retail stores from coast to coast are these signs that represent hosiery manufacturers' losses —goods that fail to come up to the required standard because of a defect that mars them.

Strike at the source of this evil. Good light will help. Nature's light, put to work in the mill on double duty. Every clear day in the year a better working day because OJACO Mill White on ceilings and walls is making the sun work.

No glare! A softly diffused glow that helps the eyes and guides the hands to perfect work. A clean, bright, wholesome working place where workers' morale is unconsciously and inevitably kept higher—with attendant increase and improvement in production.

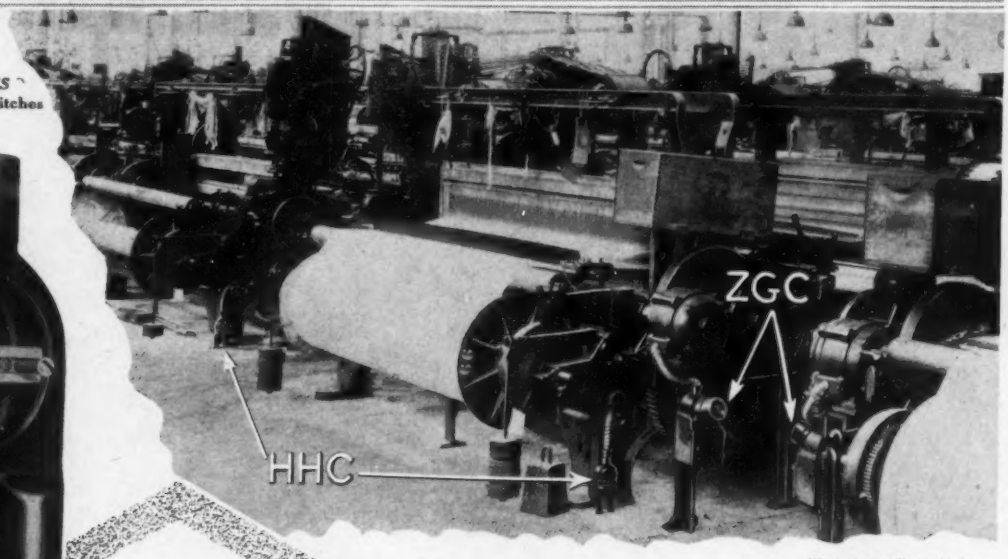
Write, wire or telephone for an OJACO expert. Listen to him for a few minutes. He'll show you one way to improve your output.

OLIVER JOHNSON & CO., Inc.
Paint Makers
Providence, R. I.

DISTRIBUTORS: Cowles & Bleckley, Atlanta, Ga.; Charlotte Supply Co., Charlotte, N. C.; Lewis E. Tracy Co., Boston, Mass.; F. P. Van Hosen Co., Rochester, N. Y.; M. F. Bragdon Paint Co., Portland, Me..; Dwelle Kaiser Co., Buffalo, N. Y.; American Hard Wall Plaster Co., Utica, N. Y.; B. A. Cook Co., Fitchburg, Mass.; J. B. Farnum Co., Woonsocket, R. I.; Alexander Grant's Sons Co., Syracuse, N. Y.; Wm. F. Harticon, Fall River, Mass.

CONDULETS

HHC CONDULETS take various covers, switches or round base fittings.



"Lettering on illustration indicates type of Condulets."

Planning Mill Electrical Installations

IN planning your mill electrical installations, it is all important that careful thought be given to motor control equipment; otherwise, this is apt to be the most troublesome point in the entire installation. This is particularly true because of the frequent use and occasional abuse of this part of the installation.

The ZGC Condulet provides a substantial, dust-tight housing for the fuses and a mounting surface for the mill type motor starting snap switch.

The HHC Condulet is very useful in loop wiring systems when installed as shown in the illustration.

CROUSE-HINDS COMPANY
SYRACUSE, N. Y.
BOSTON NEW YORK CHICAGO
Condulets Panelboards
Knife Switches Floodlights
Guy Anchors
1642

Condulet the Job

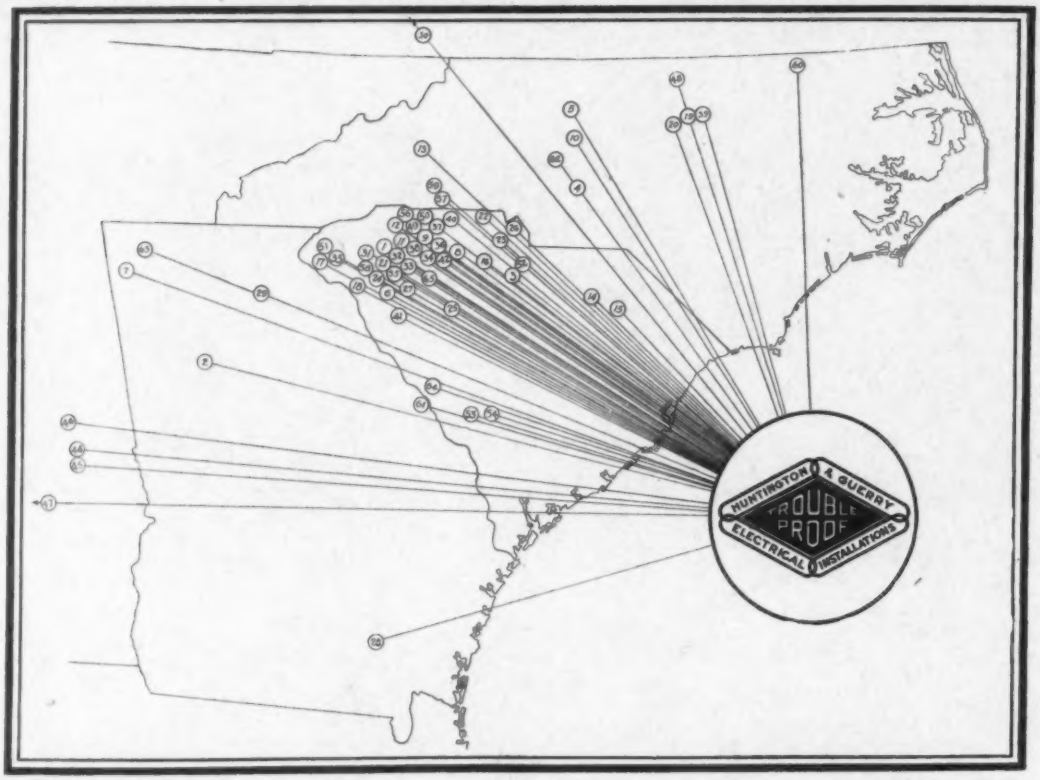
ZGC CONDULETS are convenient, compact, enduring motor controlling switches.

CROUSE-HINDS

Here are the Owners of the MILLION AND A HALF HAPPY SPINDLES

Driven or Lighted by

HUNTINGTON & GUERRY "TROUBLE PROOF" ELECTRICAL INSTALLATIONS



(1) GREENVILLE, S. C.
1st Southern Textile Exposition
2nd Southern Textile Exposition.
3rd Southern Textile Exposition.
4th Southern Textile Exposition.
Southern Textile Exposition Bldg.
(2 contracts)
American Spinning Co.
(5 contracts)
Dunean Mills
(5 contracts)
Greenville Iron Works
Poinsett Mills
Woodside Cotton Mills
(2 contracts)
Brandon Mills
Camperdown Mills
(3 contracts)
Monaghan Mills
Mills Mfg. Co.
(2 contracts)
City of Greenville (pumping sta.)
Camp Sevier (U. S. Nat. Guard)
Chester M. Goodyear Co.
Couch Mills
Minter Homes Co.
Cyclone Starter & Truck Co.
(2 contracts)
Judson Mills
(3 contracts)
Saluda Mfg. Co.

(2) ATLANTA, GA.
Exposition Cotton Mills

(3) GREAT FALLS, S. C.
Republic Cotton Mill No. 2

(4) ALBEMARLE, N. C.
Wiscasset Mills Co.
(8 contracts)
Efird Mfg. Co.
(6 contracts)

(5) WINSTON-SALEM, N. C.
P. H. Hanes Knitting Co.
(4 contracts)
Hanes Rubber Co.
(2 contracts)
Hanes Hosiery Mills
(2 contracts)

(6) HONEA PATH, S. C.
Chiquola Mfg. Co.
(2 contracts)

(7) TRION, GA.
The Trion Co.
(2 contracts)

(8) UNION, S. C.
Monarch Mills
(2 contracts)
Victor-Monaghan Mills—Ottaray Plant
(2 contracts)

(9) SPARTANBURG, S. C.
Beaumont Mfg. Co.
(2 contracts)
Saxon Mills
(2 contracts)
Caldwell & Co.
(2 contracts)
Camp Wadsworth (U. S. Nat. Gd.)
Spartanburg County Mills
Spartan Mills
Model Mill (Text. Ind. Inst.)

(10) LEXINGTON, N. C.
Erlanger Cotton Mills
(4 contracts)

(11) GREER, S. C.
Victor-Monaghan Mills (Greer Plant)
(2 contracts)
Victor-Monaghan Mills (Victor Plant)
(4 contracts)
Franklin Mills

(12 ARLINGTON, S. C.
Victor-Monaghan Mills (Apalache Plant)

(13) MARION, N. C.
Clinchfield Mfg. Co.

(14) DARLINGTON, S. C.
Darlington Mfg. Co.
(4 contracts)

(15) HARTSVILLE, S. C.
Southern Novelty Co.
(4 contracts)

(16) CHESTER, S. C.
Baldwin Cotton Mills
(4 contracts)
Springstein Mills
(2 contracts)
Eureka Mills

(17) WESTMINSTER, S. C.
Oconee Mills
(3 contracts)

(18) ANDERSON, S. C.
Riverside Mfg. Co.
(2 contracts)
Orr Cotton Mills
(2 contracts)
Equinox Mills
(3 contracts
Anderson Cotton Mills

(19) DURHAM, N. C.
Golden Belt Mfg. Co.
(3 contracts)
Erwin Cotton Mills
Durham Hosiery Mills Co.
(6 contracts)

(20) CHAPEL HILL, N. C.
Durham Hosiery Mills
University of North Carolina

(21) PIEDMONT, S. C.
Piedmont Mfg. Co.
(4 contracts)

(22) CLOVER, S. C.
Hawthorn Spinning Mills

(23) ROCK HILL, S. C.
Aragon Mills
(2 contracts)
Arcade Cotton Mills
(2 contracts)
Blue Buckle Cotton Mills
(2 contracts)

(24) BELTON, S. C.
Bair Mills
(2 contracts)

(25) NEWBERRY, S. C.
Mollohon Mfg. Co.
(2 contracts)

(26) FORT MILL, S. C.
Fort Mill Mfg. Co.
(5 contracts)

(27) WARE SHOALS, S. C.
Ware Shoals Mfg. Co.

(28) WAYCROSS, GA.
Ware County Light & Power Co

(29) GAINESVILLE, GA.
Gainesville Cotton Mills
(3 contracts)
Pacolet Mfg. Co.
(3 contracts)

(30) MAYSVILLE, KY.
Maysville Cotton Mills
(2 contracts)
Cochran Bros.
(2 contracts)

(31) EASLEY, S. C.
Easley Cotton Mills
(3 contracts)
Alice Mills
Glenwood Cotton Mills

(32) SIMPSONVILLE, S. C.
City of Simpsonville
(2 contracts)
Simpsonville Cotton Mills
(3 contracts)

(33) FOUNTAIN INN, S. C.
Fountain Inn Mfg. Co.
(2 contracts)

(34) WOODRUFF, S. C.
Woodruff Cotton Mills

(35) SENECA, S. C.
Victor-Monaghan Mills (Seneca

(36) TROUGH, S. C.
Pacolet Mfg. Co.
(2 contracts)

(37) GLENDALE, S. C.
D. E. Converse Co.

(38) TUCAPAU, S. C.
Tucapau Mills

(39) EAST DURHAM, N. C.
Durham Cotton Mfg. Co.
(2 contracts)

(40) GAFFNEY, S. C.
Gaffney Mfg. Co.

(41) GREENWOOD, S. C.
Grendel Mills

(42) JONESVILLE, S. C.
Victor-Monaghan Mills (Wallace Plant)
(2 contracts)

(43) ENOREE, S. C.
Enoree Mfg. Co.
(3 contracts)

(44) ALEXANDER CITY, ALA.
Alexander City Cotton Mills
(2 contracts)

(45) TALLASSEE, ALA.
Mount Vernon-Woodberry Mills
(2 contracts)

(46) TALLADEGA, ALA.
Samoset Mills

(47) STONEWALL, MISS.
Stonewall Cotton Mills

(48) ROXBORO, N. C.
Longhurst Cotton Mills
Roxboro Cotton Mills

(49) INMAN, S. C.
Inman Mills
(2 contracts)

(50) CHESNEE, S. C.
Chesnee Mills

(51) WALHALLA, S. C.
Victor-Monaghan Mills (Walhalla Plant)
Keowee Yarn Mills

(52) LANCASTER, S. C.
The Lancaster Cotton Mills

(53) BLACKSVILLE, S. C.
Sunlight Hosiery Mills

(54) BAMBERG, S. C.
Santee Mills

(55) CONESTEE, S. C.
Conestee Mills

(56) FINGERVILLE, S. C.
Cohannett Mills

(57) CAROLEEN, N. C.
Henrietta Mills

(58) PELZER, S. C.
Pelzer Mfg. Co.

(59) SPINDALE, N. C.
The Elmore Co.

(60) ROANOKE RAPIDS, N. C.
Rosemary Mfg. Co.

(61) AUGUSTA, GA.
Sibley Mfg. Co.

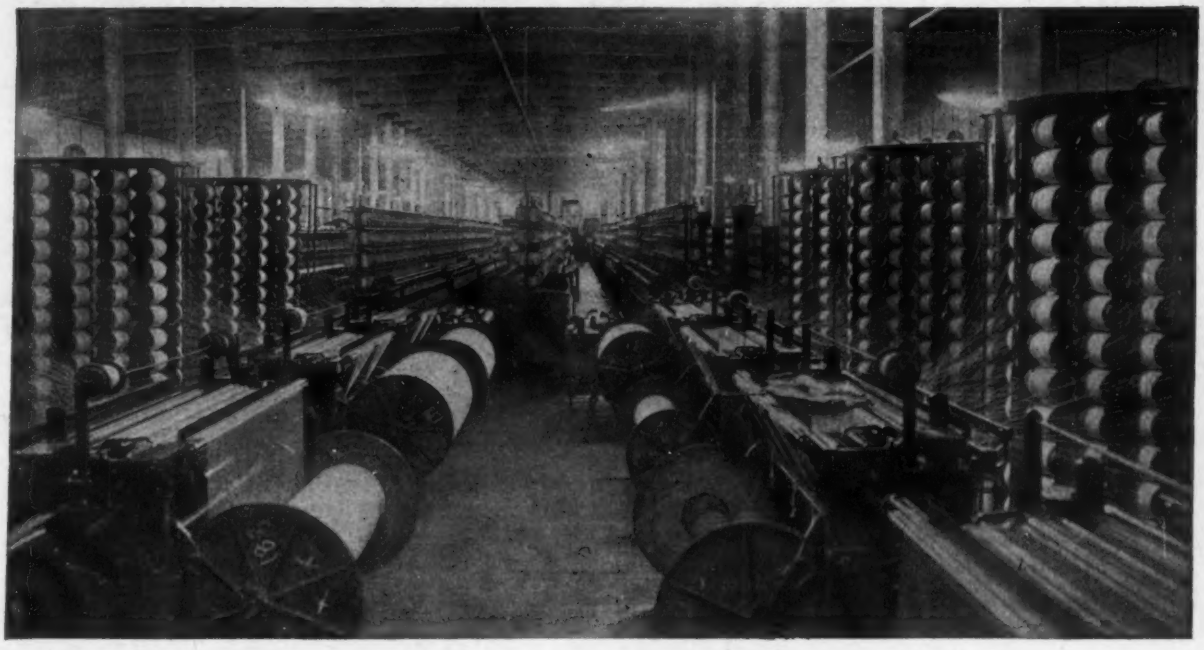
(62) SALISBURY, N. C.
Yadkin Finishing Co.

(63) LA FAYETTE, GA.
Consolidated Textile Corp. (Union Div.)

(64) VAUCLUSE, S. C.
Graniteville Mfg. Co.

(65) LAURENS, S. C.
Laurens Cotton Mills

GREENVILLE, SOUTH CAROLINA.



A typical Cooper Hewitt installation in a textile mill

"Better than Daylight"—
a fact not a hollow slogan

The most conclusive test of mill lighting is its ability to enable operatives to see over a large area.

Cooper Hewitt Light

has undergone competitive tests with daylight and emerged the victor.

One test took place in the tire fabric weave shed of the Brighton Mills, Passaic, N. J. Under exactly the same conditions, first with 10½ foot candles of north daylight and then (at 9 p.m.) with 3½ foot candles of Cooper Hewitt Light, 15 operatives "counted ends" as far as they could see.

With the daylight the average distance of clear vision was 17.4 feet, while with Cooper Hewitt Light at about one third the intensity, the average was 24.8 feet.

This test is one of many that have justified for Cooper Hewitt Light the claim, "Better than daylight."

Cooper Hewitt Electric Company

Boston—161 Summer Street
Chicago—618-9 Fisher Building
Cincinnati—First National Bank Bldg.
Cleveland—Engineers' Building
Detroit—Ford Building
Hoboken—95 River Street

Hoboken New Jersey
BETTER THAN DAYLIGHT
COOPER HEWITT LIGHT

Los Angeles—Keese Engineering Corp.
Milwaukee—Security Building
New York—120 Broadway
Philadelphia—Drexel Building
Pittsburgh—Westinghouse Building
St. Louis—Central National Bank Bldg.
Syracuse—University Building

CH-67

© Underwood & Underwood

Harding Blue

THE beautiful shade of blue selected by the First Lady of the Land for some of her gowns is destined thereby to be most popular among discriminating women.

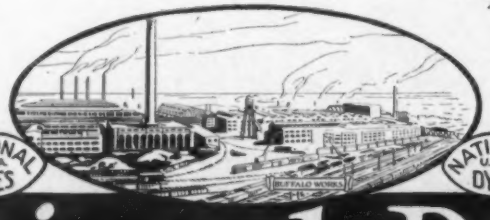
The color elements that go to make up this handsome shade are obtainable by the use of "National" dyes. Our colorists will be glad to cooperate with dyers of all classes of textiles in endeavoring to duplicate its tone on their material.

This service will be rendered either in the mill dyehouse, or in our shade-matching laboratories.

National Aniline & Chemical Co., Inc.

21 Burling Slip, New York

Akron
Boston
Chicago
Hartford
Charlotte



Montreal
Toronto
Providence
Philadelphia
San Francisco

National Dyes

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor. **R. W. PHILIP, Associate Editor.**

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The name of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Member Associated Business Papers, Inc.

Volume 85 **Member Audit Bureau of Circulation.** **No. 7**

CONTENTS

EDITORIAL—

Industry Builds Success 475

The Immigration Restriction Bill 476

GENERAL AND TECHNICAL—

Manchester and the World Conference 477

The Real England 480

A Review of a Report on Sizing 481

The Six-Hour Day in Industry 493

The Second World Cotton Conference 497

Soap 500

What the Southern Mills Are Doing 505

The New England Mill Situation 511

Cotton Comment 515

Cotton Facts 515

Notes About Men You Know 516

HOW OTHER MEN MANAGE—

Some Questions on Carding 519

Lowering Speeds to Increase Production 519

Studying Picker Troubles 519

Anent the Picker Evener 521

Using a Machinery Plan in Checking Production.. 523

The Creighton Opener 527

"Jimmy" Is Still Alive 529

Settings for 7s and 8s Yarn 529

Watch the Drawing and Fly Frames 531

Roving Frame Difficulties 532

The Technic of Mule Spinning 533

Young Workers 537

Belting—How Saved, How Spoiled 539

Notes About Men You Know 542

KNITTING SECTION—

Flat Combination Cams 545

Among the Knitting Mills 547

The Knit Goods Market 549

A New Outlet for Hosiery 553

Price Guarantees Unsatisfactory 553

The Yarn Market 554

Sidelights on the Labor Situation 555

The Purchasing Power of a Day's Work 555

World Cotton Conference 557

Save Thousands of Dollars a Year With

CLEAN FLOORS

Many cotton mills are doing it. They have abandoned the ***old methods*** of scrubbing and mopping and have adopted the Finnell System of Power Scrubbing. Now they save from one or two thousands up to twelve thousands of dollars ***every year*** on comparatively small investments.

If ***you*** are still using the old methods you are actually throwing money away—more than FINNELL FLOOR SCRUBBING EQUIPMENT would cost you. At your request we will send a representative fully competent to discuss your problems of floor cleaning.

Finnell equipment comes in right size units for any size mill and priced so that no mill can afford to be without it.

Write today. No obligation on your part.

AMERICAN SCRUBBING EQUIPMENT CO.

Also manufacturers of Finola Scouring Powder

General Offices: 188 N. Wabash Ave., Chicago Factories: Hannibal, Mo.

DISTRICT OFFICES

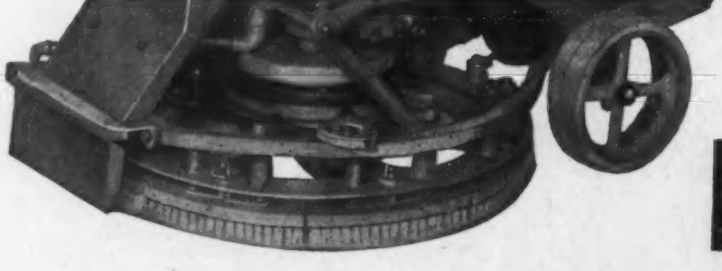
ATLANTA	BUFFALO	DENVER	LOS ANGELES	NEWARK	PHILADELPHIA	SALT LAKE CITY
BALTIMORE	CHICAGO	DETROIT	LOUISVILLE	NEW ORLEANS	PITTSBURGH	SAN FRANCISCO
BOSTON	CINCINNATI	INDIANAPOLIS	MILWAUKEE	NEW YORK	PROVIDENCE	SEATTLE
	CLEVELAND	KANSAS CITY	MINNEAPOLIS	OMAHA	ST. LOUIS	

FINNELL SYSTEM
OF POWER SCRUBBING

FINNELL SCRUBBER

It SCRUBS *Electrically!*

"CLEAN FLOORS Reflect Clean Business"



With the Publishers—

A Comparison of Thick and Thin Boiling Starches

DR. WILLIAM R. CATHCART.

The opportunity to present the results of private investigations in the research laboratory by certain groups of mills seldom falls to the lot of the technical publisher. Such research work entails much time and expense and is usually conducted in order to obtain certain desired informatiin for the benefit of the interested mills and retained by them for obvious reasons.

Under the caption, "A Review of a Report on Sizing," appearing upon another page of this number, we are presenting what might be called the "by-product" of a private investigation conducted at the Research Laboratory of the Warwick Mills at Centerville, Rhode Island. The primary intent of the research, which was made at the direction of Wellington, Sears & Company of Boston, was entirely of private or local interest, but the pursuit of the facts desired also brought out many valuable facts and comparative figures in connection with warp sizing. These have been suitably collated in the present article by Dr. William R. Catheart, Technical Director of the Mill and Paper Division of the Corn Products Refining Company of New York, with such explanatory remarks as might be necessary in order to maintain the continuity of the separate features and tests.

In the preparation of the photo-micrographs for publication, the exact size has been retained as nearly as this was commercially possible in the photo-engraving process, and these illustrations, in connection with the text matter and tables, constitutes a most valuable addition to sizing literature.

Dr. William R. Catheart, the author, to whose efforts and careful arrangement the readers of COTTON are indebted for the article, is a native of Columbia, South Carolina. He was awarded the degree of Bachelor of Arts and Master of Arts at the University of South Carolina, and Doctor of Philosophy at the University of Heidelberg. He was for five years Professor of Chemistry and Physics at the College of Charleston, Charleston, South Carolina, and was engaged during the next fifteen years in industrial and manufacturing chemistry. Following this he entered the field of consulting and engineering chemistry which kept him employed in the United States and abroad during the succeeding four years. Three years ago he was appointed Technical Director for the Corn Products Refining Company. Among his published papers may be mentioned, "Corn Starch in the Textile Industry"—National Assn. of Cotton Manufacturers—and "Sizing Hints for the Practical Slasherman."

Frederick Jerome Hoxie, who conducted the laboratoryinvestigation at the Warwick Mills and from whose report the data for Dr. Catheart's review were obtained, is a native of Rhode Island. Graduating from the Massachusetts Institute of Technology in Electrical Engineering in 1892, Mr. Hoxie engaged in the electrical contracting business until 1903, when he was appointed Special Inspector by the Factory Mutual Fire Insurance Companies to investigate special problems in fire protection.

After fifteen years of this work, Mr. Hoxie accepted the position as head of the Textile Research Laboratory at the Warwick Mills, making studies on the strength of yarn and cloth, as well as microscopic studies on yarn and size.

Mr. Hoxie has published pamphlets on: "Dry Rot in Factory Timbers;" "Fire Hazards of Celluloid;" and "Humidity and Rubber Fires."

In addition to these, Mr. Hoxie has prepared the following published papers:

"Humidity a Factor in Cotton Picker Fires," presented before the National Association of Cotton Manufacturers.

"The Photographic Plate as an Index of Spontaneous Ignition," presented before the American Society of Mechanical Engineers.

"Tests on Special Air Plane Fabrics," Discussion before the American Society of Mechanical Engineers.

"Creosoted Lumber for Insulating Factory Roofs," presented before the American Wood Preservers Association.

"Preventing Rot in the Roofs of Moist Factories," presented before the American Society of Heat and Ventilating Engineers.

"A Method of Locating Leaks in Underground Water Pipes," presented before the New England Water Works Association.

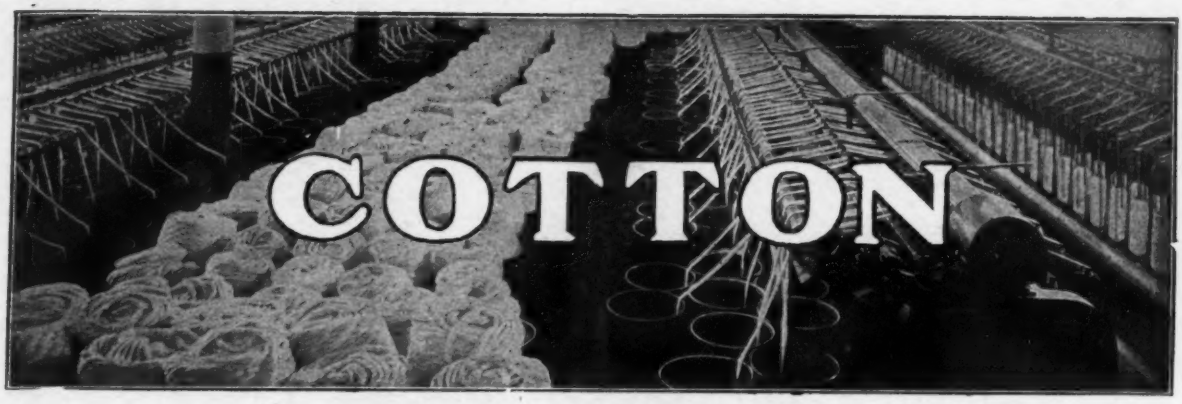
"Artificial Fog for Preventing Fire and Rot in Pulp Wood Piles," two papers, before the technical section of the Pulp and Paper Association of Canada.

"The Miscroscopy of Textiles," presented before the American Society of Mechanical Engineers.

AMONG COTTON'S READERS

FULLER E. CALLAWAY
LAGRANGE, GA.
Financier Manufacturer Merchant Farmer

"Of the many trade and technical journals that I subscribe for, COTTON is one of the few that I read regularly when I am at home. I consider it a most interesting and valuable journal."



May, Nineteen-Twenty-One

Industry Builds Success.

We hear much of the shorter industrial day or the shorter work week, always with the concomitant clause "without decrease in the present wage." In almost every instance this is an endeavor to get something for nothing, to acquire higher pay without increased effort, to receive more returns from industry without being more industrious. In due time it will be proven a sophism in the class with attempting to lift ourselves by our boot straps. We cannot continually take more out of a business than we put in. If this is attempted, it will be found that we are doing so only at the expense of some other workers.

This plain fact is well illustrated in the case of the railroad brotherhoods. Their arrogance and the weakness of the Federal Administration passed the Adamson law in 1916. It was primarily a reduction in the basic day which in this instance was nothing more or less than a wage increase, and it was the beginning of a number of similar threats, during the incumbency of Director General McAdoo, resulting in additional increases in wages. Of necessity, these increases in cost of transportation had to be passed on to transportation users, and today, with deflation taking place in practically all industrial wages except transportation, we find other industries and their wage earners suffering as a direct consequence.

As an example of this, it is now costing Southern cotton mills about three per cent of the value of their product to ship goods East against one and one-fourth per cent prior to Government control of the railroads. They are having to reduce wages in order to help the railroads continue to pay the present high wage scale which is manifestly unjust to mill operatives and causes dissatisfaction among them when their wages are of a necessity reduced and their neighbor who happens to be a railroad employee continues to get the high rates.

For another example, take the shipment of fruits and vegetables over long distances to the winter markets: a carload of lettuce from Sanford, Florida, sold in New York in February for $339.48. The freight alone amounted to $339.75, the icing charges were $77.50, the war tax was $12.52, the cartage was $27.93 and the commission to the receiver or broker was $33.95. When the total expenses were paid, the farmer owed the commission men $152.17. And this is not an isolated instance. The New York State Division of Foods and Markets can furnish many such cases. This condition not only works a hardship on the grower, but it keeps the consumer's market strained to the limit of endurance in an effort to pay the grower a living wage in addition to the exorbitant transportation charges.

Now let us see how this reduced work week or shorter industrial day has worked out in some other industries. The National Industrial Conference Board conducted an extensive investigation to secure the practical experience of 436 manufacturing establishments, employing together 373,536 workers, who, since the beginning of 1919, have reduced their weekly working schedule to 48 hours or less. In 87.2 per cent of these establishments a reduction to a work week of 48 hours or less was accompanied by a decrease in weekly output per worker. With regard to the experience of the various industries it was found that in cotton manufacturing *all the establishments investigated experienced a decrease in weekly output under the reduced hours.* In wool manufacturing only one establishment out of 60 was able to maintain the weekly output, and in silk manufacturing only one out of the 23 plants studied. In boot and shoe manufacturing, out of the 88 plants covered, it was found that three were able to increase the weekly output and 13 to maintain it, while in the metal manufacturing industries, out of 117 plants investigated, nine reported that their weekly output had been increased and 16 that they had been able to maintain weekly production.

However, efforts are still being made to decrease the hours of labor and increase the rate of the pay. Legislators seeking for votes are constantly hatching out some newfangled law making it a crime to work more than a certain number of hours. Alfred F. Waldo, in a recent number of "100%," states the question succinctly saying, "Will it be a 'free' land in which legislation shall notify a man, whose breast burns with ambition to rise, and acquire property and position and influence, that if he toils beyond an established minimum, he commits an offense?" In "A Glance Behind the Curtain," Lowell says:

> "No man is born into the world whose work
> Is not born with him; there is always work,
> And tools to work withal, for those who will;
> And blessed are the horny hands of toil."

Industry supports us all. We may not all be able to show the "horny hands," but it is the law of life that if we do not work we cannot produce. Production, not consumption, is the business of society. As pointed out by Waldo, we consume that we may be here—be here, and live, aspire, achieve. Leisure is not an end in itself, but a means to an end, and that end is productive work. Probably no well known man of our generation has voluntarily

worked longer daily hours that Thomas A. Edison, and look at what he has achieved! Labor agitators and legislators begin at the wrong end of the problem when they assume that consumption rather than production is the chief business of society. To compel or try to induce men to diminish the volume or excellence of their work is to take from them a part of their chief reason for existence.

The Immigration Restriction Bill.

The expiration of the Sixty-sixth Congress at noon on March 4, gave President Wilson the opportunity to kill the immigration restriction bill without the formality of a veto message. The mere fact that he did not sign the bill before Congress adjourned, ended its life, and its re-introduction in the present session of the Sixty-seventh Congress was necessary to start the legislative machinery again.

The agreement of the leaders of the two houses to accept the bill that was passed and sent to President Wilson by the preceding congress promised to eliminate much of the difficulty that would usually impede the passage of such legislation in a special session. For it must be remembered that the present congress is really in session to pass tariff and tax revision laws. Except for these and for the necessary appropriation bills, Congress would not have met until next December. The members of both houses are in a hurry to get away from Washington, and they are not in a mood to devote much time to legislation outside of the emergency program. Re-passage, however, of the immigration bill agreed upon at the last congress is assured in advance of White House support, and there should not be any difficulty in enacting the law. The immigration measure was adopted by a vote of five to one by the last House of Representatives, and only two members opposed its final passage in the upper house.

The bill, so passed and now re-introduced, is a compromise modification of the Dillingham bill. That measure—originally introduced in 1913—sought to restrict immigration into the United States to 5 per cent a year of the number of aliens of each nationality resident in the United States. The House of Representatives had adopted a measure, sponsored by Chairman Johnson of the House Committee on Immigration, which put a practical embargo on all immigration. The Dillingham bill was considerably more liberal, and the conferees of the two houses reduced the 5 per cent allowed in the Dillingham bill to 3 per cent. Both houses then accepted this compromise measure. The vital sentence of the bill provides:

"That the number of aliens of any nationality who may be admitted under existing statutes to the United States, in any fiscal year, shall be limited to 3 per centum of the number of foreign born persons of such nationality resident in the United States as determined by the United States census."

A special provision is made, however, to exempt from this restriction, "professional actors, artists, lecturers, singers, nurses, ministers of any religious denomination, professors for colleges or seminaries, persons belonging to any recognized learned profession, and persons employed as domestic servants."

To carry out the provisions of the measure, the Secretary of State, the Secretary of Commerce and the Secretary of Labor, are to proclaim the number of aliens admissible annually from each country, and then to announce at regular intervals the numbers which have been admitted and the number still admissible. The act to continue in force until June 30, 1922.

The purpose of the 3 per centum restriction is to close the doors as tightly as possible to immigration from Southeastern Europe, while still admitting practically all the immigrants likely to come from Northwestern Europe. The immigration into the United States, until 1890, came most heavily from Northwestern Europe. These immigrants scattered promptly throughout the country, engaged in every form of trade and industry, especially agriculture, and were promptly assimilated. Since 1890, however, the chief source of immigration has changed to Southeastern Europe. Most of this class of immigration remained in the large cities and industrial centers, retained their European language and customs, and showed but slight tendencies to assimilate.

Under the 3 per centum limitation, the nations of Northwestern Europe will be entitled annually to send us 182,212 immigrants. This is almost exactly the average annual immigration from these countries to the United States from 1910 to 1914. That average was 182,850. The census of 1910, upon which the percentage is based, shows that our total immigrant population from Northwestern Europe was 6,740,400.

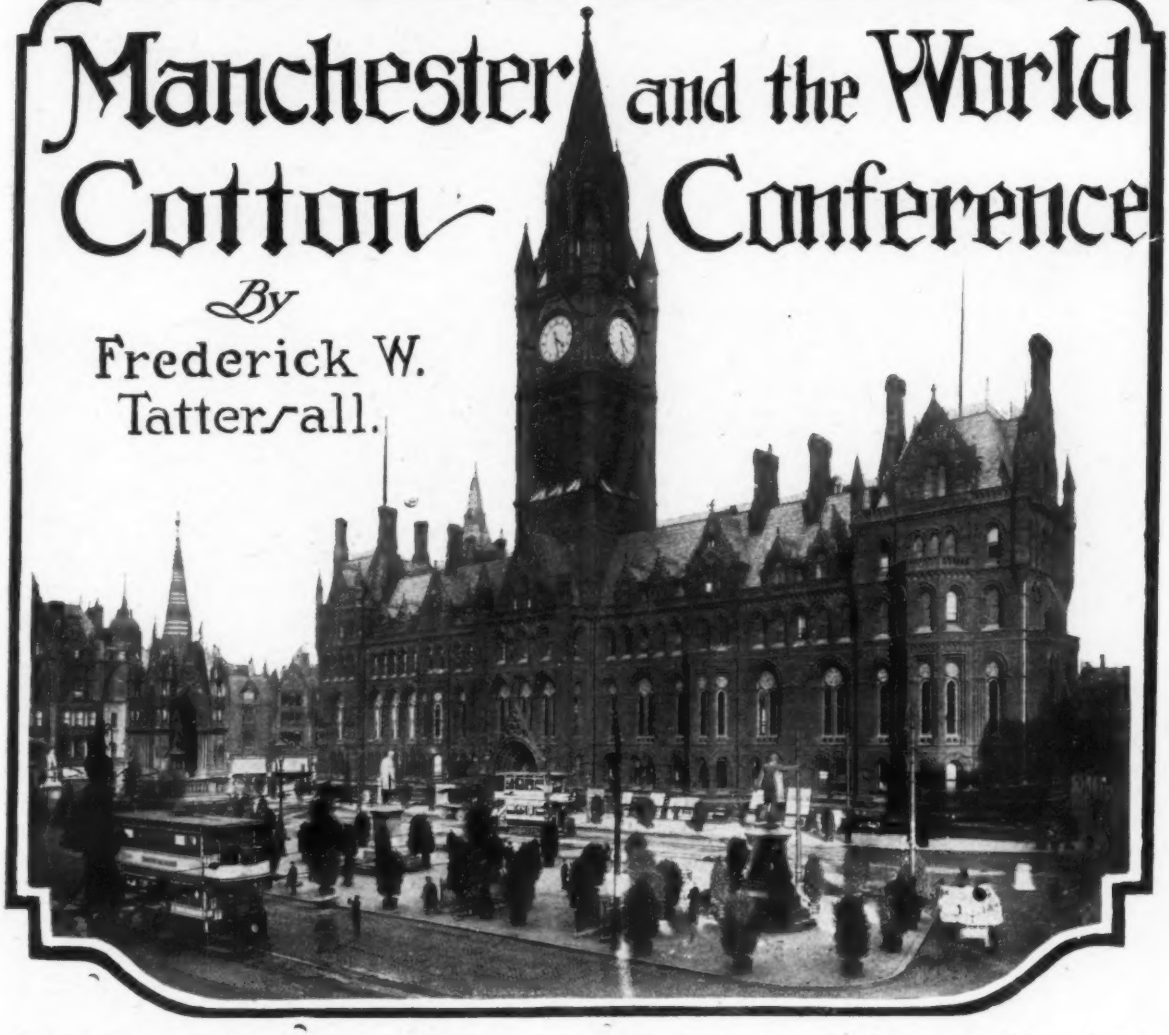
The same census shows a population of 5,108,312 immigrants from Southeastern Europe. Upon this basis these countries will be entitled to send us a total of 153,250 immigrants a year. This is but slightly in excess of one-fifth of the average annual immigration from these countries from 1910 to 1914. That average was 738,612. The contrast between the 738,612 average for Southeastern Europe and 182,850 from Northwestern Europe is an index to the seriousness of the present immigration problem, as well as to the effectiveness of the new measure.

It is interesting to note that in the tabulation of the countries of Northwestern Europe, Germany would be entitled to send us 75,040 immigrants a year—based on a German population in the United States of 2,501,333. Yet in the period from 1910 to 1914, the average immigration from that country was only 32,239. On the other hand, the United Kingdom would be allowed 75,206 instead of the average annual immigration of 89,188 because the immigrant British population in the United States is 2,573,534. Belgium would be allowed 1,482 instead of 5,690, its annual average emigration to the United States from 1910 to 1914. France would send us 3,523 instead of 8,601; the Netherlands 3,694 instead of 7,147, Denmark 5,449 instead of 6,694, and Switzerland 3,745 instead of 3,762. The only countries which would be allowed to send us more than they have been sending besides Germany, are Norway with 12,116, instead of an annual 11,416, and Sweden, 19,156 instead of 17,843. The restrictions upon Southeastern Europe falls most heavily upon Italy. That country would be limited to an annual emigration to the United States of 40,294—instead of the annual 220,967 which it has been sending us. The population of Italian origin in the United States is 1,343,125. The Russian immigrant population in the United States is 1,732,465. Instead of sending us 210,922 a year, it would be restricted to 51,974. Austria-Hungary would be allowed an annual contribution of 50,115 instead of 225,931. The share allotted to Austria-Hungary would have to be divided among the various nations which have been created by the Treaty of St. Germain. This is

(*Continued on page* 492.)

Manchester and the World Cotton Conference

By Frederick W. Tattersall.



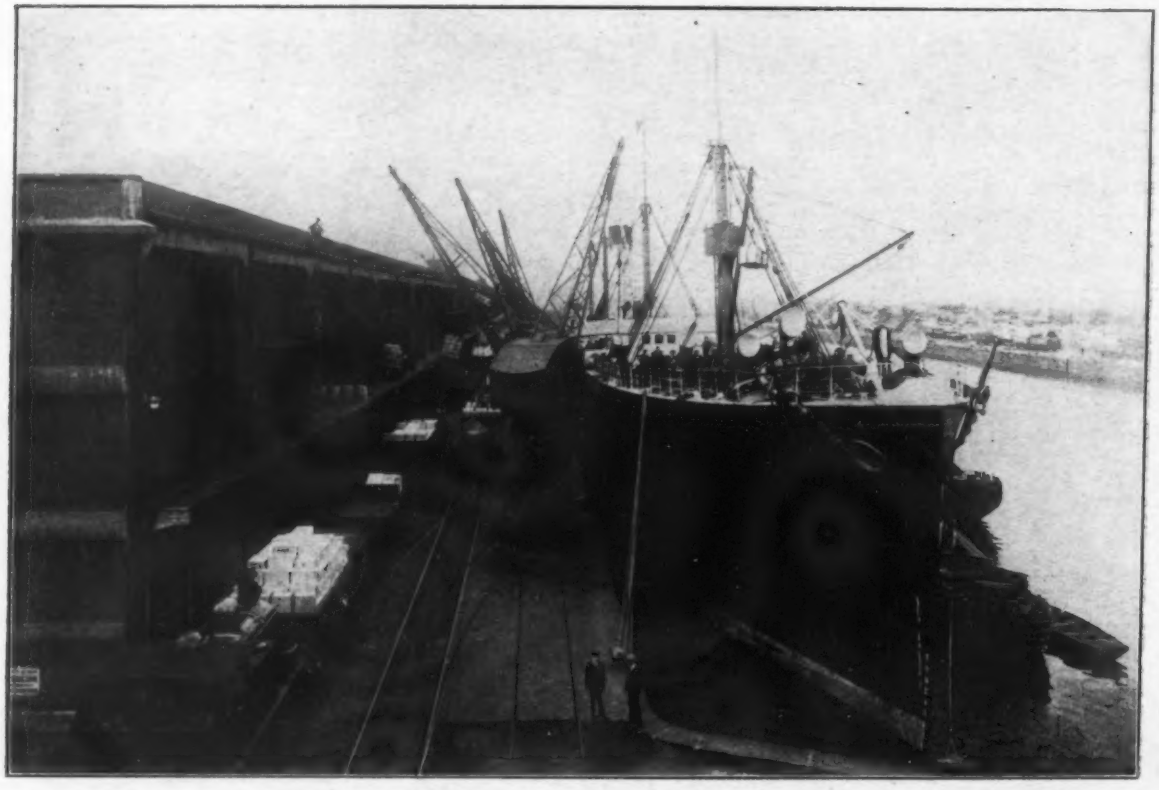
Manchester Town Hall, Where the Meetings of the World Cotton Conference Will Be Held. Albert Square in the Foreground.

Manchester is the greatest industrial center in England. It is estimated that within a radius of twenty-five miles, the population is even larger than in a similar area around London. Although chiefly known as the center of the cotton trade, other industries of importance are carried on in the district. The climate is highly suitable for cotton spinning and manufacturing, and its population includes an exceptionally large number of highly skilled artisans. The district is favored by an abundant supply of coal, and as iron is obtainable not far away, there are numerous works for the production of machinery of various kinds. Liverpool is only thirty miles away, and the Manchester ship canal is of such a character that it is possible for large vessels to reach the heart of the city itself. As a railway center it is unparalleled in Great Britain, and it is comparatively easy to reach other towns from the excellent stations which it possesses. In order to give some idea of Manchester as a business center a table is given below showing the banking clearing returns for several English centers during 1919, from which it will be seen that Manchester is by far the most important city in Great Britain:

Manchester	£946,035,875
Liverpool	653,687,800
Dublin	381,659,500
Birmingham	145,079,000
Newcastle-on-Tyne	113,411,600
Bristol	76,601,000
Leeds	67,713,400
Sheffield	63,087,700
Leicester	50,758,000
Nottingham	39,097,800

Manchester Ship Canal.

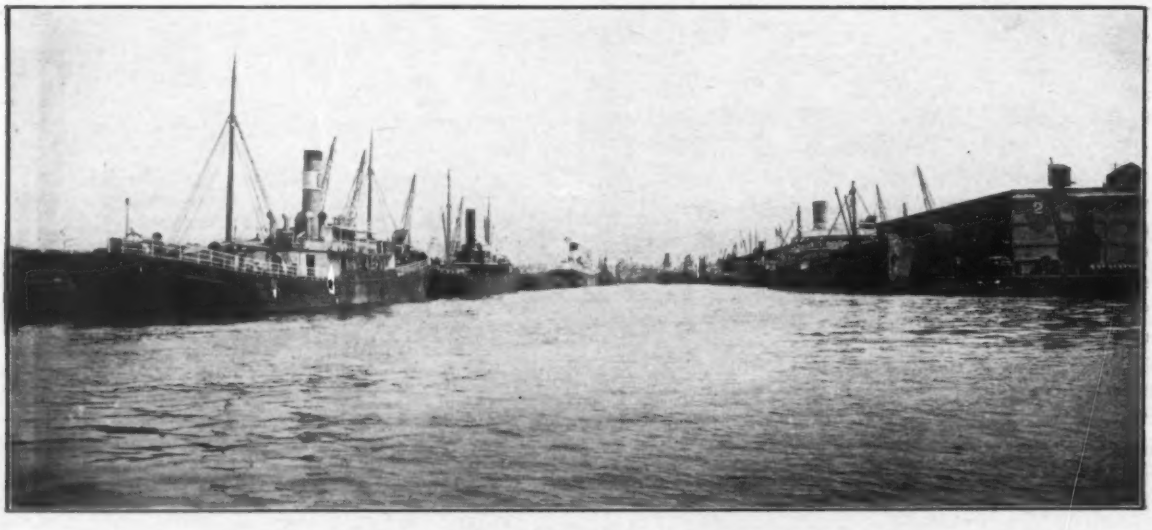
The construction of the Manchester ship canal, a deep waterway thirty-five miles long between the city and the sea, has given Manchester a world-wide trade, as well as a world-wide reputation, and has made it one of the first ports in the Kingdom. No port has better dock accommodation, and what is still more important, no other port in the world can boast of such a wonderfully favorable geographical position. It is situated in the very heart of an area which industrially is the largest in England. The rise of Manchester to its present position is very considerably due to the construction of the ship canal.



LEYLAND LINE STEAMER "BOSTONIAN" DISCHARGING CARGO IN NO. 9 DOCK. STEAMERS OF THIS LINE RUN REGULARLY BETWEEN MANCHESTER AND BOSTON.

During the years immediately preceding the completion of the canal the industries of Manchester were suffering from the burden of excessive freight charges, which threatened to stifle many commercial undertakings. The Bill for the construction of the canal was passed in August, 1885, but it was not until January 1st, 1894, that the whole thirty-five miles of the canal were opened to navigation for the first time. The depth of the canal is 28 feet. The width is 120 to 180 feet at the bottom. The water level of the docks is 71 feet above mean sea level and vessels are lifted up by means of five sets of locks. The quays total six and a half miles in length.

The directors of the undertaking have always followed the policy of providing all the latest mechanical devices that make for ease, economy and speed in the handling of goods. The warehouses are especially designed for the storage of all kinds of merchandise, whether it be cotton, provisions, fruit, meat, or general goods. The fact that



A GENERAL VIEW OF NO. 9 DOCK, MANCHESTER.

shippers in and outside Great Britain have long ago appreciated the advantages that accrue from the using of the port is shown by the following table which sets out the growth of the traffic since 1894:

Year	Tons
1894	925,659
1900	3,060,516
1905	4,253,354
1910	5,780,161
1913	5,780,161
1914	5,424,732
1915	5,434,046
1916	4,858,749
1917	4,152,754
1918	3,497,995
1919	3,589,043

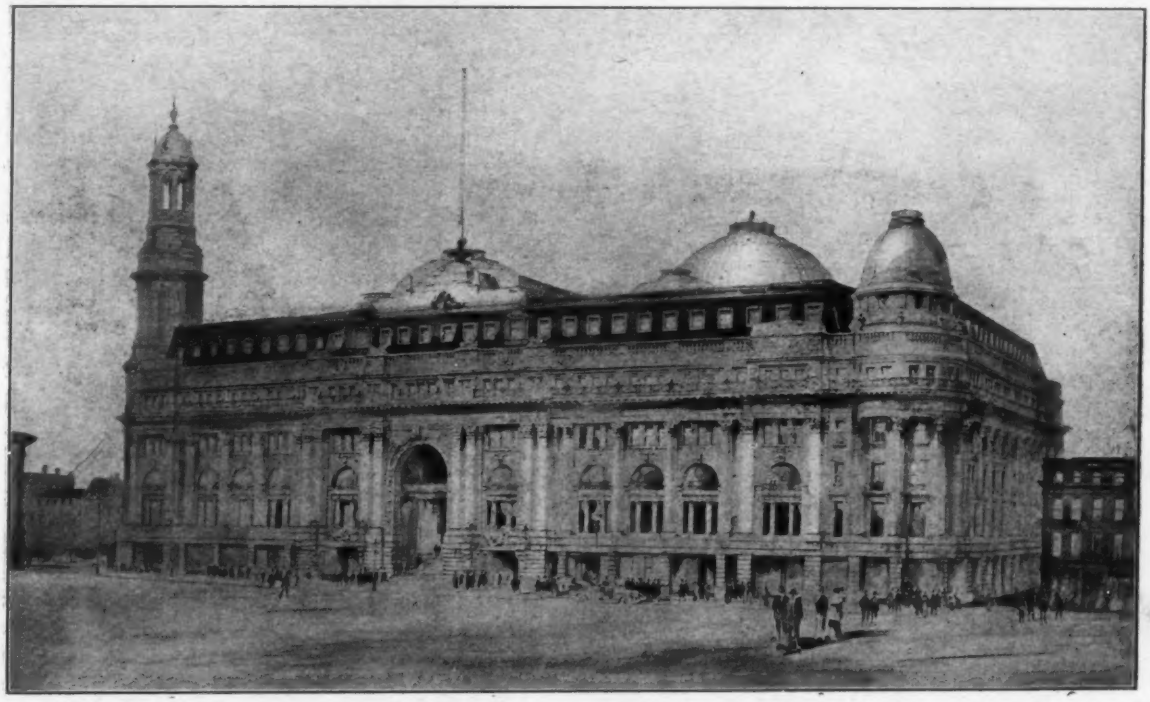
Manchester as a port for the receipt of raw cotton was adversely affected during the war, but the following table shows that steady progress is now being made:

	Season 1918-19 Bales	Season 1917-18 Bales	Season 1916-17 Bales	Season 1915-16 Bales	Season 1914-15 Bales
American	380,597	313,461	422,052	514,101	620,487
Egyptian	138,134	121,450	144,441	162,010	149,426
Other gr'ths	11,698	32,924	282	200	1,759

Manchester Royal Exchange.

At the present time the Manchester Royal Exchange is being considerably extended. It is on record that when Queen Victoria visited the institution in 1851 she made the remark "What a magnificent room." She authorized the owners to call it a Royal Exchange. Just before the European war began, an enlargement became imperative, and the proprietors began the work. The war made it impossible to get men and material to the extent required, but the extension is, at the time this is written, approaching completion. Hitherto the floor space on one level has only been a little over 4,000 square yards, but henceforth it will be well over 6,000 square yards.

It is understood that at the moment the membership is about 11,500 and the list of subscribers fills quite a large book. Cotton spinners and manufacturers number close upon 2,000, and of course there are numerous cotton brokers, merchants and agents, yarn agents, cloth agents, bleachers, dyers, printers and cotton waste dealers. Iron and steel merchants form a special section, and there are many subscribers from allied industries. It may be pointed out that it is an open exchange, and in ordinary times any one can join on paying the subscription. On each day of the week from two o'clock to three-thirty in the afternoon there is a large attendance, but the Boards are very crowded on market days, which are Tuesday and Friday.

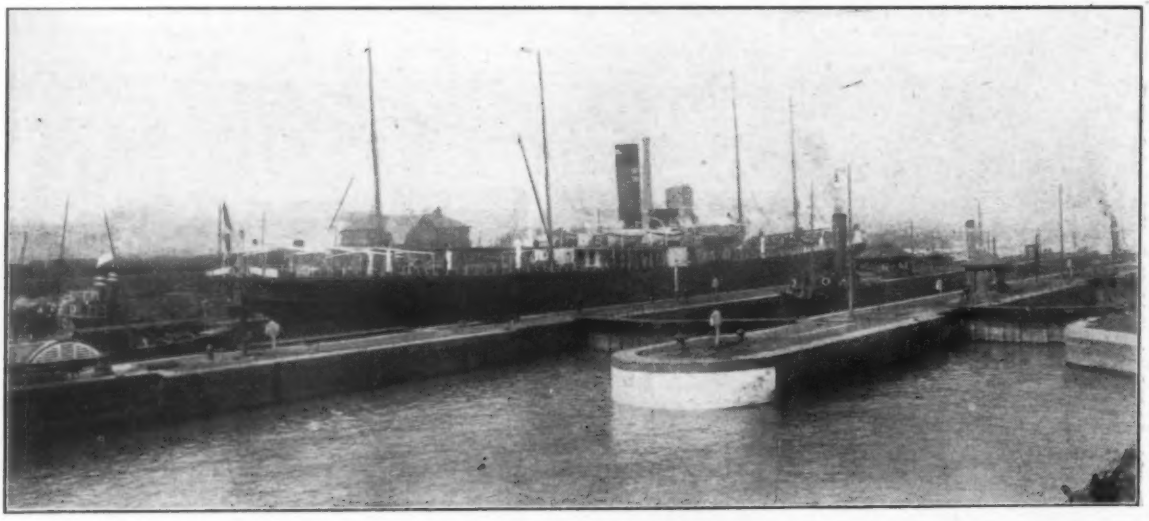


NEW ROYAL EXCHANGE, MANCHESTER, NOW IN COURSE OF ERECTION. VIEW FROM ST. ANN'S SQUARE.

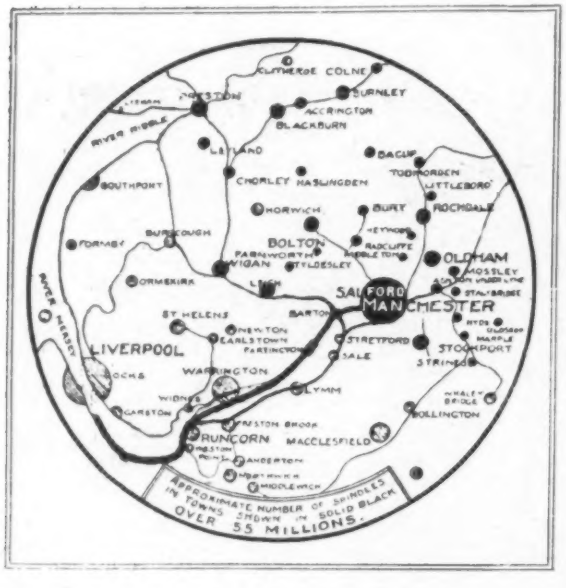
Manchester College of Technology.

The college was founded in 1824 as the Manchester Mechanics Institute, which has since become a college of university rank, attracting students from all parts of the world. The present buildings were completed in 1903. The value of the site, buildings and equipment exceeds £280,000. The cost of maintaining the college during the financial year 1918-19 was approximately £67,000, of which the city of Manchester contributed about one-third. One of the functions of the college is to provide the university training which is now coming to be regarded as almost essential to all members of the higher staff of important industrial concerns.

The work of the college is controlled by the Manchester



ENTRANCE TO THE MANCHESTER SHIP CANAL AT EASTHAM, 35 MILES FROM MANCHESTER. THERE ARE FIVE SETS OF LOCKS IN THE CANAL; THE LARGEST 600 FEET LONG AND 80 FEET WIDE.



City Council through its Education Committee, and the College of Technology Sub-Committee, with the assistance and advice of the Board of Studies. The buildings and most of the equipment of the college belong to the citizens of Manchester. The college has thus a more democratic form of government than any other university institute in England.

The Victoria University.

The present Victoria University of Manchester was founded under the will of a Manchester merchant, John Owens, who died in 1846, leaving a sum of about £96,000 for the foundation of a college which should be free from all religious tenets. Owens College began its existence in 1851. The college was reorganized in 1870. In 1875 the idea was mooted of raising the college to the rank of a university with power to grant degrees, and it was finally decided to establish it under the name of the Victoria University, a university of which the seat should be in Manchester, and of which Owens College should be the first constituent, with a provision for the admission from time to time of other approved colleges. The governors now control a very fine pile of buildings situated in Oxford street, Manchester.

"The Real England."

Lord Northcliffe, speaking of President Wilson's visit to Manchester and the Manchester Ship Canal, said:

> "Many people are inclined to think that New York is the United States. New York is not the United States, and London is by no means England. Within very easy reach of Manchester are 14,000,000 people —14,000,000 of the most progressive English people. The President is going to see the real England."—
> (The London Times, December 23, 1918.)

Next month a large body of American cotton manufacturers are going to have an opportunity to see "the real England." Manchester, the second city of England, is practically the center of a district operating more than fifty-five million spindles, and Manchester will welcome the visitors with open arms.

The Manchester Ship Canal, which forms a continuous waterway from Liverpool on the Mersey to the Manchester docks, the College of Technology, the Cotton Industrial Research Laboratory and certain of the Oldham Mills will be open to these delegates to the World Cotton Conference. Industrial England, "the real England," will welcome them at Liverpool, at Manchester, everywhere.

The problems to be presented before the World Cotton Conference delegates are many and vital. They affect all branches of the industry from the grower to the selling agent. But even if there were no technical or business problems, the Conference would still be worth while because it will broaden the outlook of those attending, making them vision their business from a world standpoint instead of the limited local view which, with many, now obtains. Such a visit will also counteract the perverted impressions of the Conference and our Conferees that has been so gratuitously circulated by some publications in this country.

A Review of a Report on Sizing

BY WILLIAM R. CATHCART, Ph.D.,
TECHNICAL DIRECTOR, MILL AND PAPER DIVISION, CORN PRODUCTS REFINING CO.

While an increasing number of textile manufacturers are recognizing the advantages of thin boiling corn starch for warp-sizing, still the number of those who remain unconvinced is somewhat of a reflection on the progressive and scientific attitude of the industry. The task of carrying home the truth of these advantages is a difficult one from the standpoint of the starch manufacturer. Comparative tests can be made through the cooperation of the mill management and employees, and while such cooperation is frequently whole-hearted and efficient, still there are many instances where the exact control of conditions necessary to secure reliable records upon which conclusions must be based, is considered too burdensome or too disturbing to routine work to be undertaken. There are even cases where conclusions are reached which have no other foundation than the personal opinions of those who have an unconscious prejudice for or against a change. Experience has also shown that investigations undertaken by manufacturers of products used in the plants are regarded as having been carried out with a biased intent and therefore the results are received with many grains of salt. The instances where the textile manufacturers have undertaken scientific investigations or research on their own initiative are comparatively rare, but there are hopeful indications here and there that marked improvement in this condition is now under way. Organizations are sometimes large enough to carry on such work independently. Where this is not warranted it may be done by cooperative arrangement or by using a public research laboratory. Fortunately, it is sometimes possible to place the results of private investigations at the disposal of the whole industry. This is the result of a broad-minded attitude that information which furthers the industry as a whole will also repay those who have contributed thereto.

The effort to fairly and squarely compare the respective values of thin and thick boiling starches for warp sizing has been very importantly furthered by the recent work of Mr. F. J. Hoxie, whose standing in his special field is of the highest rank. This work involved the investigation of products produced by three different plants so that the results could be compared and certain differences explained. The main purpose of the research had a direction which being of private or local interest will not be discussed in this article. However, it so happened that, unknown to the investigator, the three plants concerned were each using a different type of corn starch for sizing their warps, and quite unintentionally and certainly without the least suspicion of bias, the results obtained, most happily for all interested, permitted a comparison of the relative efficiency of the starches used. It is self-evident, but in all fairness it should be stated, that if a comparison of the values of the different types of corn starch had been the object of the investigation, many points which afterwards suggested themselves, would have been followed to their ultimate conclusion. It is to be most earnestly hoped that those interested will consider these factors of sufficient importance to undertake further research to determine their real bearing upon the final result.

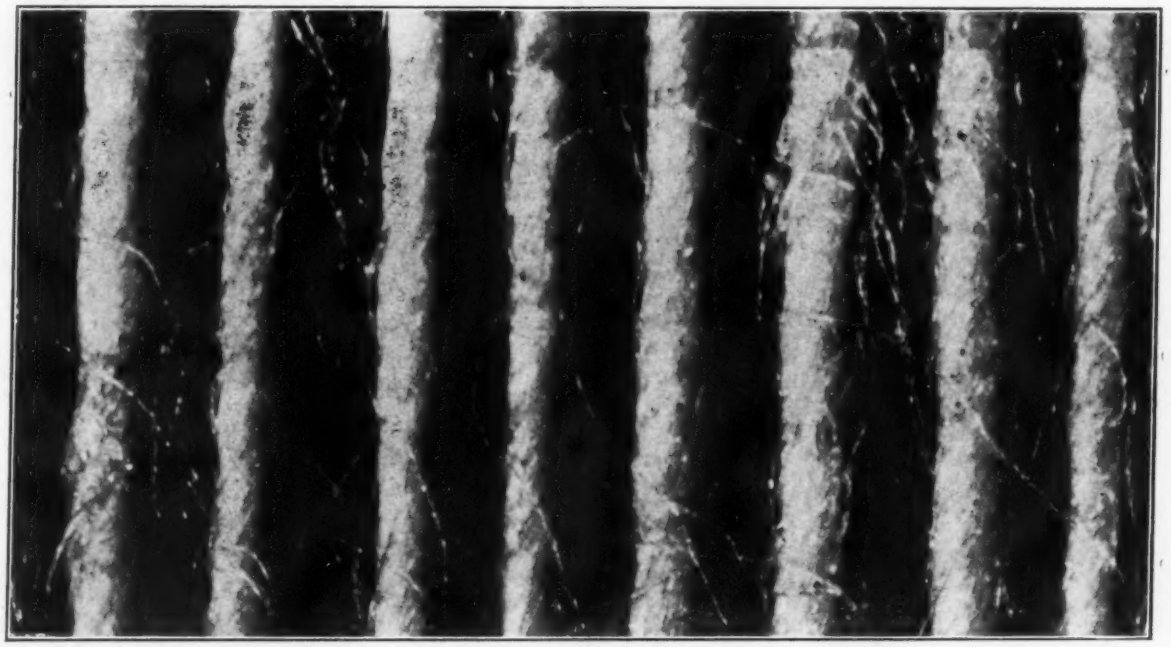


PLATE E.B.A. NO. 16. STRANDS OF SIZED YARN. ENLARGEMENT 39 DIAMETERS. SHOWS THE APPEARANCE UNDER MICROSCOPE OF 12s YARN SIZED WITH "EAGLE FINISHING" STARCH. AN EVEN YARN WITH FIBERS WELL LAID.

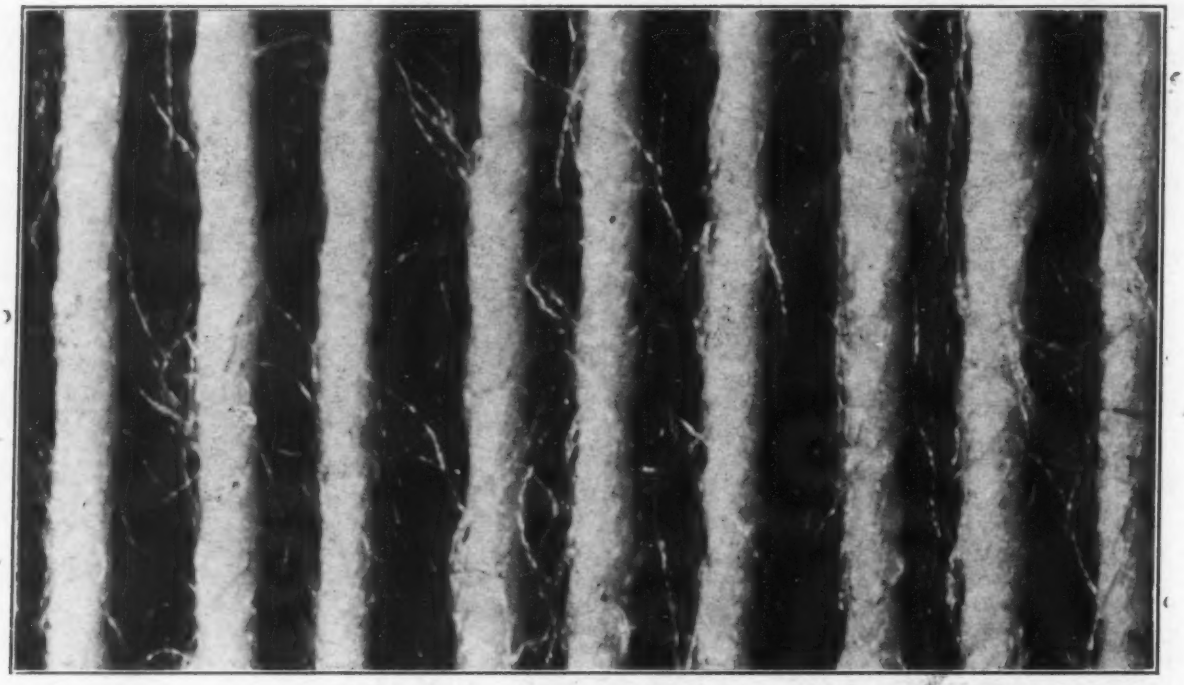


Plate E.B.C. No. 4. Strands of Sized Yarn.. Enlargement 39 Diameters. Shows the Appearance Under Microscope of 16s Yarn Sized With "Eagle Finishing" Starch. An Even Yarn With Fibers Well Laid.

Of the mills in question, one uses "Eagle Finishing," a thin boiling corn starch; one, "Famous N Powdered," a refined thick boiling alkaline corn starch; and one, the ordinary crude "pearl" corn starch. This assortment could not have been better chosen. It represents a modified starch of the thin boiling type, a medium priced starch of the alkaline thick boiling type, and the lowest priced pearl starch. The investigation covers the following points: Breaking Strength of Warps. Amount of Size Added. Stretch of Warp. Change in Warp Number.

The warp numbers varied from 17s to 13s. For the purposes of this discussion it is considered fair to treat the results without differentiation in reference to numbers. This plan is adopted for brevity and clearness. The report also comprises a collection of photo-micrographs, some of which are reproduced here, because of their special interest.

Breaking Strength of Warps.

Ordinarily in the mill, the breaking strength determinations are made on a skein, and the parting point is that of the weakest strands. In this case the tests were made on *single* threads. Fourteen different samples were tested. On one sample one hundred separate strands were broken, on two samples fifty, on eight samples thirty, and on three samples twenty-five. In other words, the report on one sample is the average of one hundred breaks, on two samples the average of fifty, on eight samples the average of thirty, and on three samples the average of twenty-five. This method gives a much fairer measure of the quality of the spinning as well as the benefit derived from sizing. The breaking points of the individual threads will show how far is the gap between the weakest and strongest, and how these extremes differ from the average. In short the method gives a true picture of the evenness of the yarn.

Breaking Factor. In order to compensate for any variation in numbers of the yarn the so-called "breaking factor" was determined. This factor is obtained by multiplying the *true* number of the yarn by the average breaking strength of each sample, which then puts the sized and unsized yarn on an equal basis for comparison.

The results as reported are shown in the several tables herewith:

SAMPLE K.S.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with Pearl Starch (Thick Boiling)
11¾	18¼
*20	17¾
13¾	17
15	12¾
16¼	16¼
13½	16½
14¾	11½
15½	21½
14¼	14¾
13½	15
18¾	20
16¾	16¼
14¼	17
12½	13½
12¾	17½
14½	20½
13¾	14½
17¾	12¾
11¾	14
10	†12
12½	*23¼
15	13¾
16¼	12
15¾	13¾
19½	16½
14¾	12¾
13¾	15¾
15½	17¾
† 8¾	15½
14¾	20¾
Average.....14.58 oz.	16.03 oz.
Factor 226	227
% increase in break due to sizing.... 10.00	* Highest break
% increase in factor due to sizing.... 0.44	† Lowest break
% of size added..... 9.4	

Table 1.

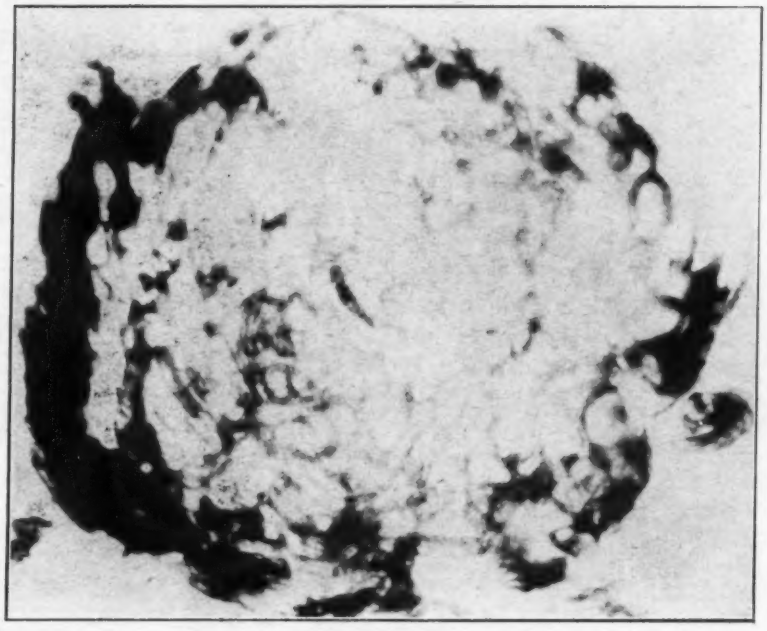


PLATE K.S. NO. 19. CROSS-SECTION OF YARN. ENLARGEMENT 440 DIAMETERS. SHOWS UNDER THE MICROSCOPE THE DISTRIBUTION AND PENETRATION OF SIZE MADE FROM "PEARL" STARCH ON 14s YARN.

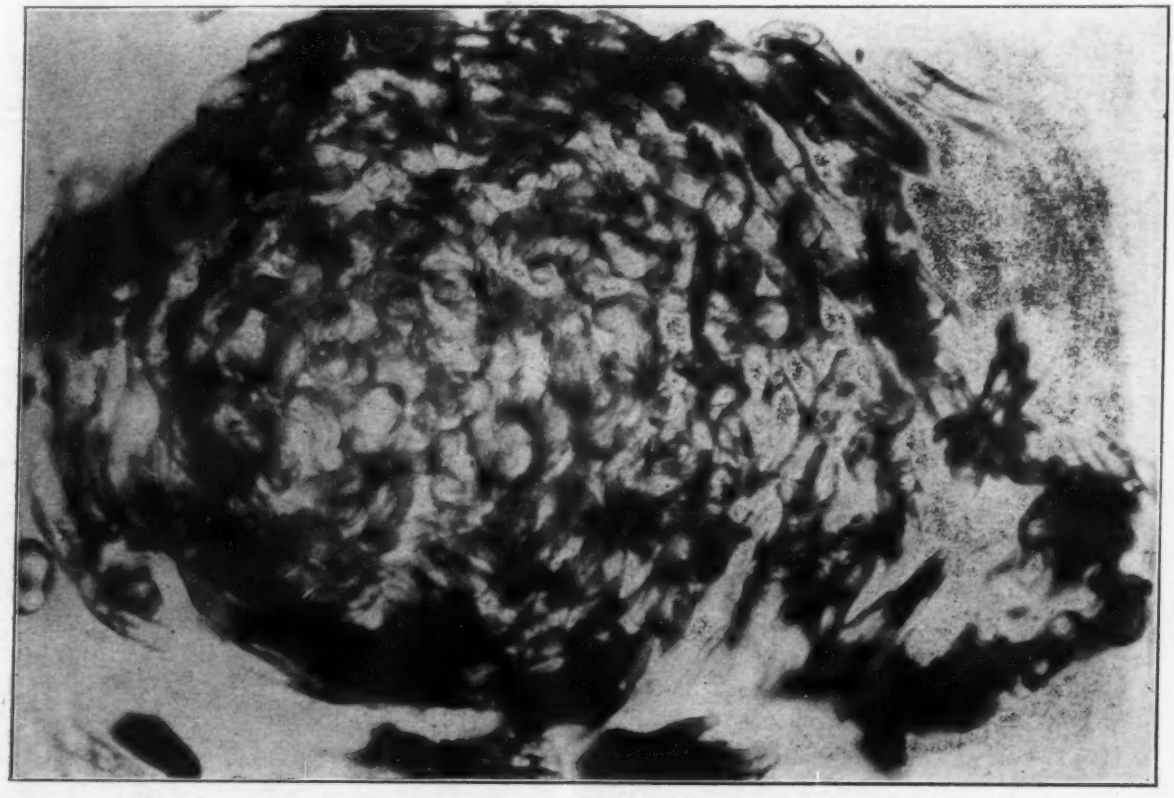


PLATE K.S. NO. 20. CROSS-SECTION OF YARN. ENLARGEMENT 440 DIAMETERS. SHOWS UNDER THE MICROSCOPE THE DISTRIBUTION AND PENETRATION OF SIZE MADE FROM "PEARL" STARCH ON 14s YARN.

The data for this review were obtained from Wellington, Sears & Company, of Boston, Mass. The investigation was made in the Research Laboratory of the Warwick Mills, Centerville, Rhode Island, and conducted by Mr. F. J. Hoxie.

As nearly as was practically possible, all the half-tone reproductions in this article are photo-engraved to the same size as the original photo-micrographs made by Mr. Hoxie, giving the reader the full benefit of the research.

SAMPLE T.L.A.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Famous N Powdered" (Alkaline Thick Boiling Starch)
15½	16¾
10¾	14¼
16¼	22
15½	17
17¼	16¼
*21½	20
19¼	17¾
19¾	18½
19¾	18
14¼	*24
21½	20
14¾	18¼
19¼	17¾
13¾	19
14	13¾
16¼	14¼
13¼	15¼
11	22½
12¾	15¼
16¼	†11½
14½	17
14¼	20¾
16¾	15¼
† 9¼	14½
14¼	19½
14½	17
18¾	14½
11	17¾
17¾	17¼
16½	18
Average .....15.65 oz.	17.45 oz.
Factor 219	229

% increase in break due to sizing.... 11.50 * Highest break
% increase in factor due to sizing.... 4.6 † Lowest break
% of size added..... 6.4

TABLE 2.

SAMPLE T.L.B.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Famous N Powdered" (Alkaline Thick Boiling Starch)
14¼	17½
17½	19¾
18¼	17½
22¾	21¾
17¾	20
18½	21¼
15	17½
15½	21¾
14¾	24
20½	19
16¾	14¾
17½	17½
20	17¼
16¼	26¼
15	*28½
17	19¾
22	23¼
15	20½
17	17
16	18¼
16¾	20¼
18¾	18½
† 9¾	15¼
16½	26¾
23¼	22½
15½	18½
16½	19½
*26¼	23
18¼	†14¼
15½	26
Average ..... 17.47 oz.	20.26 oz.
Factor 233	249

% increase in break due to sizing.... 16.00 * Highest break
% increase in factor due to sizing.... 6.9 † Lowest break
% of size added..... 8.8

TABLE 3.

In the accompanying tables the highest and lowest breaking strengths have been marked with an asterisk and a dagger for the sake of easy comparison. The wide differences shown in each instance show the importance of making a large number of single thread breaks in order to get at a true average. This method also permits a fair judgment of the uniformity of the yarn. In some instances it will

SAMPLE T.L.C.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Famous N Powdered" (Alkaline Thick Boiling Starch)
*19	13¾
9¼	15
† 5¾	11½
10¼	17
10½	11½
15¼	15
13¼	14½
13¾	13¾
10½	†10¼
12½	12¾
14	13¼
11¾	16¼
15½	*21
12½	14½
16½	14¾
12¾	19¼
14	16¼
13¾	20¾
15½	14¼
9½	15¼
17½	14¾
16½	14½
15½	14¾
9¾	17¼
16¼	16
13¾	16¼
18¼	19¼
11¾	13¾
14½	18¼
15½	17¾
Average ..... 13.50 oz.	15.43 oz.
Factor 230	245

% increase in break due to sizing.... 14.3 * Highest break
% increase in factor due to sizing.... 6.5 † Lowest break
% of size added..... 7.0

TABLE 4.

be found that the mean value of the lowest and highest breaks comes very close to the average of the whole set of breaks. Such agreement should be regarded as incidental. The whole investigation is based upon the law of averages and the greater the number of tests made, the more valuable are the results. While calculations have been made to the second place of decimals, only whole numbers should be considered. It is worthy of special emphasis that all of these tests were made under uniform moisture conditions.

Amount of Size Added.

The determination of the amount of size added to the warps was made by chemically removing the size from the yarn and weighing the samples before and after treatment. To avoid any misunderstanding on this point it should be mentioned that all such determinations were under uniform moisture conditions, and all samples put upon the same basis in this respect. It will be seen from the comparative table (Table 8) that while "Eagle Finishing," the thin boiling starch, imparted greater strength to the yarn than the thick boiling starches, the amount of size on the yarn was smaller in the case of the thin boiling starch.

Stretch of Warp.

The percentage of stretch shown by the yarn before the actual break occurred was carefully measured when each single thread was broken. These results are omitted in detail, and shown only in Table 8. This omission is partly for the sake of brevity, but mainly because other factors besides the sizing materials enter into the stretch values It is of course to be expected that there is a loss of stretch due to sizing. This is borne out by the results obtained. The stretch of a yarn is dependent upon the twist, both in the sized and unsized state. It is also dependent, in the sized state, upon the strain to which the yarn is subjected when passing over the steam cylinders of the slasher. If

SAMPLE E.B.A.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Eagle Finishing" (Thin Boiling Starch)	
23¼	21½	17¼
18½	23¼	19½
*23¼	17¾	18¾
19	24¼	20
17½	26¾	21
19	19	20
11¾	24¼	19½
13	20	19
15	25¾	16¼
17¼	18¾	24
	16¼	21
17¼	25	24¼
14¾	28¾	19¼
16¼	20¼	26½
13¼	22½	27¼
20	16½	16
16	27½	24¾
17½	20¼	20¾
16¼	20½	18¼
15	20	23¾
18¼	21¼	19¼
	20	26¼
22¼	22¼	17¾
12¾	24¼	26½
19½	17¼	24¼
†11	17	16½
14	21	19½
	19½	20¼
	19	21½
	15¾	20
	22¾	22¾
	18	17¼
	19	25¼
	15½	†13½
	19½	20¼
	19½	17
	19¼	23¼
	22¼	21
	20	23¼
	18	22½
	24¼	22¾
	23¾	17¾
	15½	26
	20	17
	12¾	20¾
	19½	22
	21	20
	12½	19½
	22	15
	*30¼	18¾
Average ..... 16.86 oz.		20.66 oz.
Factor 219		249

% increase in break due to sizing.... 22.5 * Highest break
% increase in factor due to sizing.... 13.7 † Lowest break
% of size added..... 7.9

TABLE 5.

SAMPLE E.B.B.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Eagle Finishing" (Thin Boiling Starch)	
11¾	16½	16¾
12½	14¾	13
15	16¼	15¾
10¾	15¼	14½
10	13	15¼
14	17¾	18¼
15¾	17	15
12¾	12	15¾
13¾	17	14¼
15¼	14¾	18¾
10¾	17½	17¼
11¾	18½	15½
11¾	16¼	15¼
12	† 9¼	14¾
*16	14½	11¾
† 9¼	15¾	16¾
12	16¼	15½
12¾	18	12¾
15¼	17	15½
11½	16½	11¾
11	*19¾	13¾
13¾	16	11¾
13¼	17	18¼
11¾	10¾	18½
15½	16¼	11¾
Average .....12.79 oz.		15.50 oz.
Factor 214		244

% increase in break due to size..... 21.2 * Highest break
% increase in factor due to siz..... 14.0 † Lowest break
% of size added..... 6.6

TABLE 6.

SAMPLE E.B.C.
Breaking Values in Ounces.

Unsized Yarn	Yarn sized with "Eagle Finishing" (Thin Boiling Starch)	
† 8¾	15¼	14¾
15	13¾	11¾
16	15½	14¾
15¾	17¾	15½
10¾	18½	12¼
14	17¾	13¾
9	18¼	13½
13¾	17½	17¾
17¾	17¼	14¾
9½	† 9½	18¾
13½	15	14¼
16	13¼	15½
16	13½	18¼
14¾	14¾	13¾
12	15½	16¼
12	16½	15½
*21¼	16	12¾
13¼	14¾	17
11¾	14¾	17
9½	17¾	20
		*23¼
14¾	15¾	14½
12¾	15	16½
9	12¾	14½
15¼	17½	15
17½	17¾	
Average ..... 13.56 oz.		15.66 oz.
Factor 228		248

% increase in break due to size.....15.5 * Highest break
% increase in factor due to size..... 8.8 † Lowest break
% size added 6.6

TABLE 7.

the yarn is run tight over the drying cylinders, then it is dried in the stretched condition and little or no further elasticity is possible when the beam goes to the loom. On the other hand if the yarn is run over the cylinders as slack as is consistent with proper work, then it has opportunity to retain much of its elasticity before being dried. Since the twist and conditions of slashing could not be taken into account in the case of the samples examined, figures showing the percentage loss of stretch lose some of their value as far as comparing the effect of the different starches on this property of the yarn is concerned. However, the averages included in the comparative table (Table 8) show "Eagle Finishing," the thin boiling starch, reduced the stretch value in a lesser degree than the thick boiling starches.

Change of Yarn Number.

Since the number of a yarn depends upon the number of yards necessary to weigh one pound, it is manifest that the number of a yarn will undergo a change after sizing. The number of the unsized yarn will be higher than that of the same yarn when sized. This change will be in proportion to the amount of size put on the yarn. These figures are also shown in Table 8.

Photo-Micrographs.

A most interesting and instructive collection of photo-micrographs has been prepared, showing the surfaces of the finished fabric, both front and back, strands of sized yarn, and cross-sections of the strands of sized yarn. by the courtesy of the interests for which this work was done it is permitted to reproduce here such of these photo-micrographs as have a bearing upon the subject under discussion. They are worthy of very careful examination.

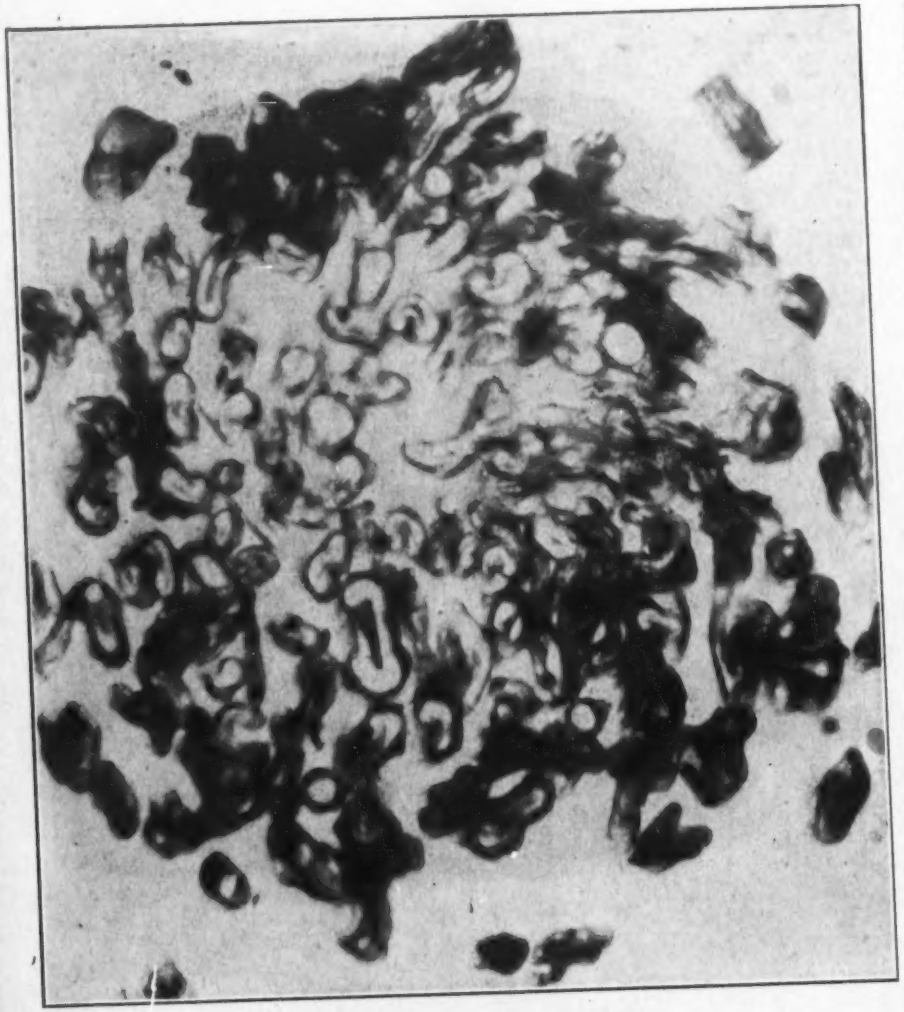


PLATE T L.C. No. 3. CROSS-SECTION OF YARN.. ENLARGEMENT 440 DIAMETERS. SHOWS UNDER MICROSCOPE THE DISTRIBUTION AND PENETRATION OF SIZE MADE FROM "FAMOUS N POWDERED" (ALKALINE THICK BOILING) STARCH ON 16s YARN.

PLATE T.L.B. No. 11. CROSS-SECTION OF YARN. ENLARGEMENT 440 DIAMETERS. SHOWS UNDER MICROSCOPE THE DISTRIBUTION AND PENETRATION OF SIZE MADE FROM "FAMOUS N POWDERED" (ALKLINE THICK BOILING) STARCH ON 12s YARN.

Plate E.B.B. No. 8. Cross-Section of Yarn. Enlargement 440 Diameters. Shows Under Microscope the Distribution and Penetration of Size Made From "Eagle Finishing" (Thin Boiling) Starch on 16s Yarn.

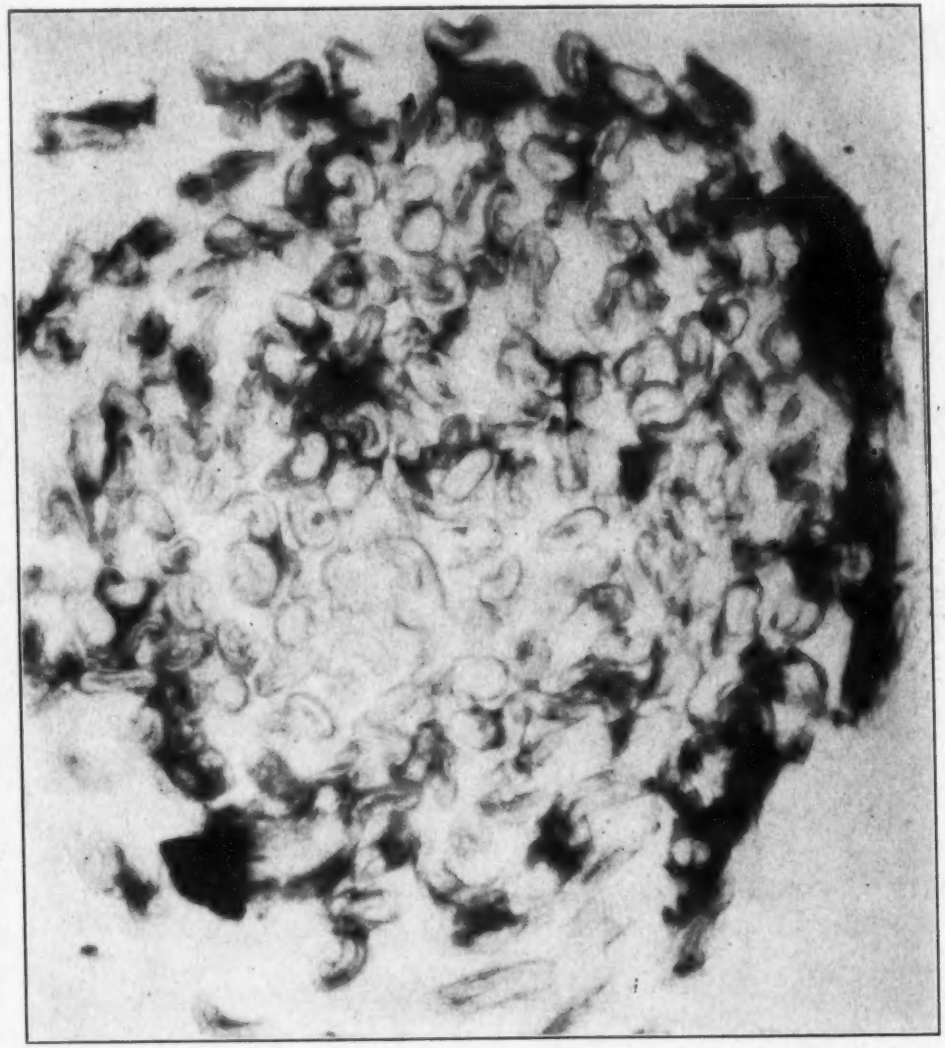


Plate E.B.A. No. 14. Cross-Section of Yarn. Enlargement 440 Diameters. Shows Under Microscope the Distribution and Penetration of Size Made From "Eagle Finishing" (Thin Boiling) Starch on 12s Yarn.

PLATE K.S. NO. 17. ENLARGEMENT 39 DIAMETERS. SHOWS UNDER MICROSCOPE SURFACE OF FRONT OF CLOTH. WARP SIZED WITH "PEARL" STARCH—14s YARN.

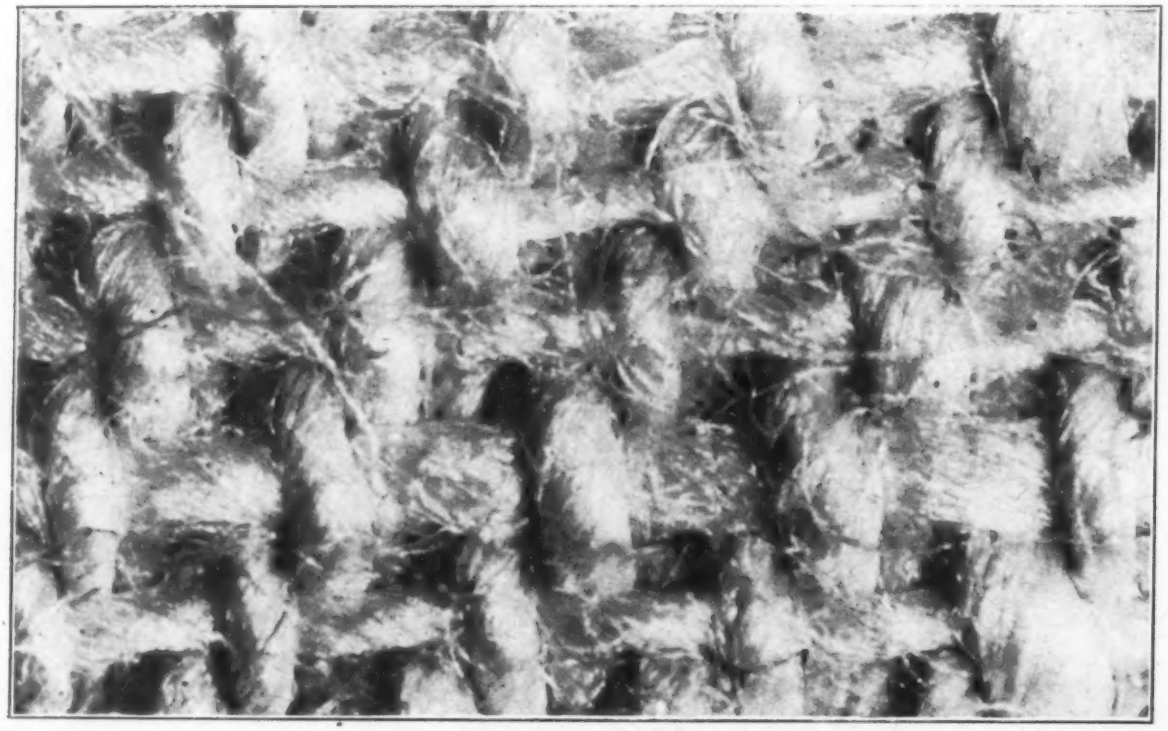


PLATE K.S. NO. 18. ENLARGEMENT 39 DIAMETERS. SHOWS UNDER MICROSCOPE SURFACE OF BACK OF CLOTH. WARP SIZED WITH "PEARL" STARCH—14s YARN.

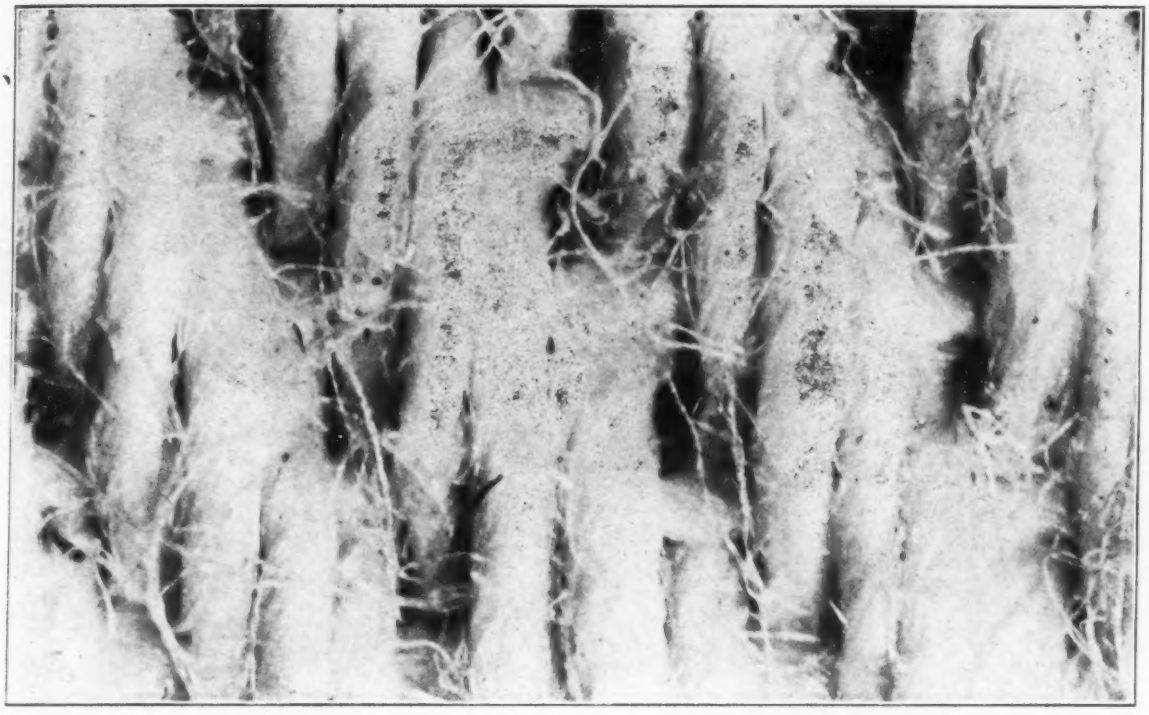


Plate T.L.B. No. 9. Enlargement 39 Diameters. Shows Under Microscope Surface of Front of Cloth. Warp Sized With "Famous N Powdered" (Alkaline Thick Boiling) Starch. 12s Yarn.

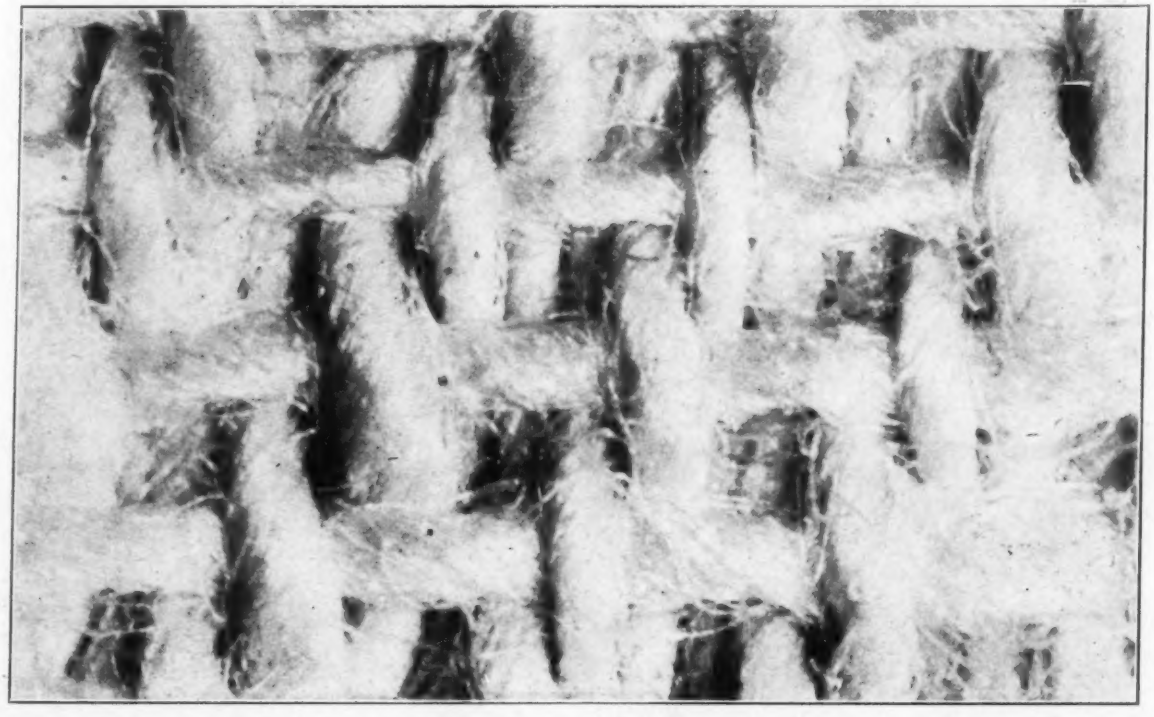


Plate T.L.B. No. 10. Enlargement 39 Diameters. Shows Under Microscope Surface of Back of Cloth. Warp Sized With "Famous N Powdered" (Alkaline Thick Boiling) Starch. 12s Yarn.

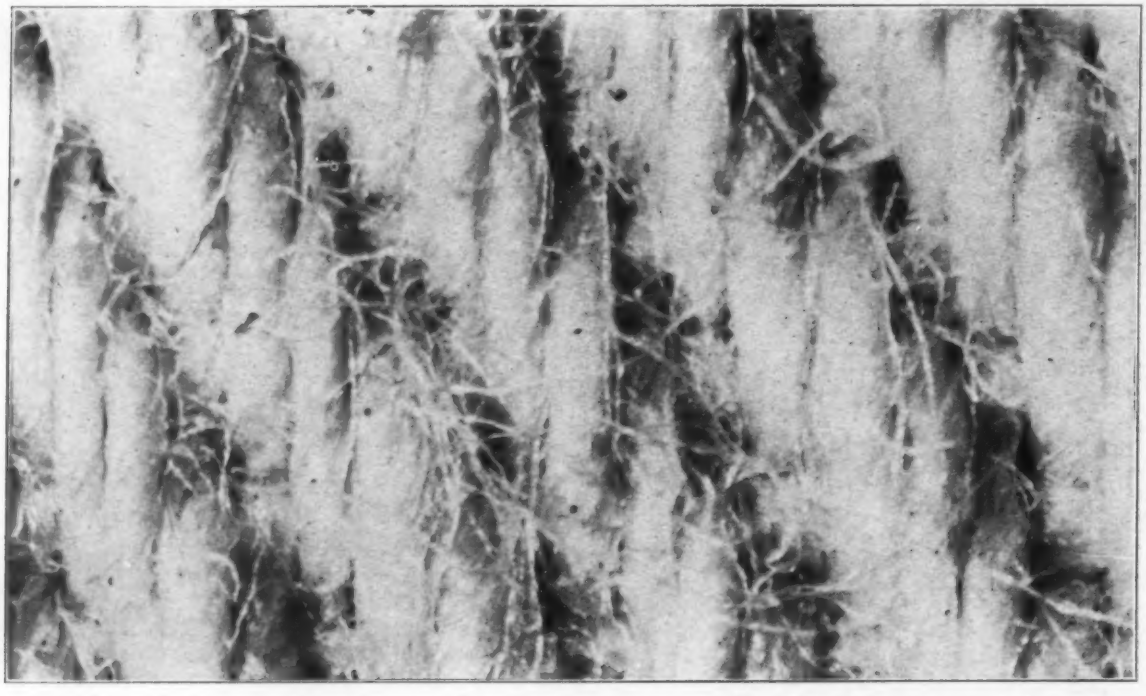


Plate T.L.C. No. 1. Enlargement 39 Diameters. Shows Under Microscope Surface of Front of Cloth. Warp Sized With "Famous N Powdered" (Alkaline Thick Boiling) Starch. 16s Yarn.

Plate T.L.C. No. 2. Enlargement 39 Diameters. Shows Under Microscope Surface of Back of Cloth. Warp Sized With "Famous N Powdered" (Alkaline Thick Boiling) Starch. 16s Yarn.

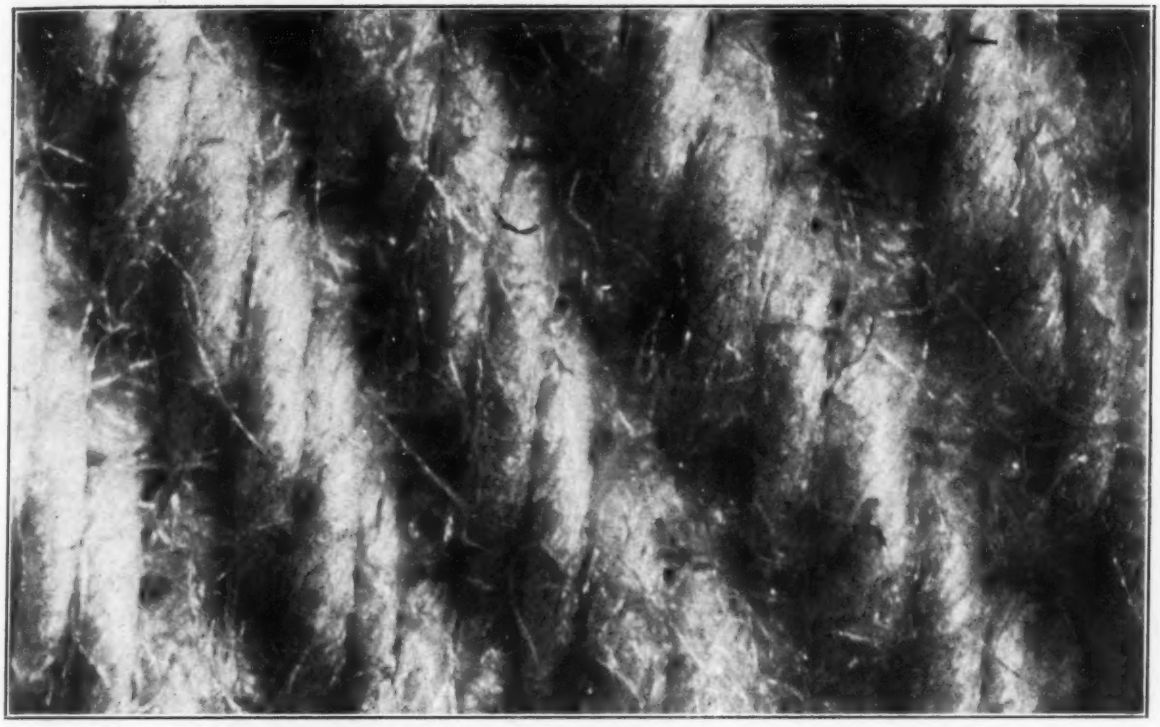


PLATE E.B.B. No. 10. ENLARGEMENT 39 DIAMETERS. SHOWS UNDER MICROSCOPE SURFACE OF FRONT OF CLOTH. WARP SIZED WITH "EAGLE FINISHING" (THIN BOILING) STARCH. 16s YARN.

PLATE E.B.B. No. 11. ENLARGEMENT 39 DIAMETERS. SHOWS UNDER MICROSCOPE SURFACE OF BACK OF CLOTH. WARP SIZED WITH "EAGLE FINISHING" (THIN BOILING) STARCH. 16s YARN.

	Pearl Starch (Thick Boiling)	(1) "Famous N Powdered" (Thick boiling alkaline starch)	(1) "Eagle Finishing" (Thin boiling starch)	% Values of "Eagle Finishing" over Pearl	% Values of "Eagle Finish'g" over "Famous N Powdered"
% Break Increase	9.90	13.93	19.70	98.98	41.42
% Factor Increase	0.44	6.00	12.30	2695.00	105.00
% Size Added (2)	9.40	7.40	7.00	34.28	-----
% Number Increase	8.60	6.86	6.50	------	-----
% Stretch Decrease	22.30	15.20	15.40	------	-----

TABLE 8.

(1) Average of three samples.
(2) The amount of size added is about equal in the case of alkaline thick boiling starch and thin boiling, while the increased strength is largely in favor of the yarn sized with thin boiling starch. In the case of Pearl starch 34% more starch was added to the yarn than with "Eagle Finishing" starch, although the breaking strength was very much lower.

Cross Sections of Sized Yarn.

These photo-micrographs were made after the sized yarn had been treated with iodine to color those portions of the fiber which had been reached by the starch. The heavy dark areas therefore represent the size distribution and penetration. The light areas show absence of size. Only what might be called typical photo-micrographs have been selected for reproduction to show the results obtained by the different types of starches. In order to make this comparison complete many views of each type should be shown in order to get a fair average for each case. This is of course entirely out of the question for this article. Best of all perhaps would be to make a "composite" photograph made up of a dozen or more sections from each type and then compare the "composites" obtained. However, the reproductions shown are instructive and interesting. All sectional views show an enlargement of 440 diameters.

The following quotations from the report are submitted on account of their special interest.

Referring to samples on which "Eagle Finishing" starch was used, viz., E.B.A., E.B.B., and E.B.C.:

"It is understood that some criticism of this cloth has has been made because of its harsh feel. This is doubtless caused chiefly by the thin boiling starch which was used on it. * * * * *

"It is of interest to note that an increase of strength in the warp yarn of from 15½ per cent to 22½ per cent has been obtained by the application of from 6.63 per cent to 7.88 per cent of starch with an average penetration of less than a thousandth of an inch into the yarn. Also it is of further interest to note the high factors obtained from the sized warp yarn.

"These factors are obtained by multiplying the actual number by the average of a considerable number of break tests and it compares favorably with yarn made from much better cotton.

"The evenness of the yarn is shown by the variation in the individual single break tests.

"It is possible that the high stretch and strength obtained by the use of this size could be retained and the harshness somewhat reduced by the use of a suitable softener. * * * * *

"The micro-photographs of the cloth show a remarkably uniform smooth yarn which indicates excellent spinning."

The author of the report is quite right in his suggestion that the harshness of the cloth samples can be reduced by the use of a suitable softener. Where the feel of the fabric is of importance the proportion and character of the softening agent should be very carefully considered.

Referring to samples on which "Pearl" starch and "Famous N Powdered" were used, viz., K.S., T.L.A., T.L.B., T.L.C.:

"Points of interest in comparing these cloths with the E.B.'s are that the starch on the E.B.'s increased the break factor from 9 per cent to 14 per cent and decreased the stretch from 8 per cent to 22 per cent, while a slightly larger amount of starch on the warps of these cloths decreased the stretch from 4.6 per cent to 26.3 per cent and only increased the break factor from 0.44 per cent to 7.0 per cent." * * * * *

It is most unusual that a private independent research of this character should be released for the benefit of the entire industry. The broad-minded point of view which prompted this action should receive general commendation, the more so, on account of the substantial character and position of the organization which has rendered the service.

The Immigration Restriction Bill.

(*Continued from page* 476.)

also true of Germany, which will have to give at least a portion of its allotment to Poland.

W. W. Husband, the new Commissioner of Immigration, appointed by President Harding, recommended the adoption of the revised Dillingham bill. He said:

"I feel that the sentiment of this country is not so much against the present large amount of immigration as the character of the newcomers. Without making invidious comparisons between nations, we are not getting the racial stocks we want in due proportion.

"We are a country made up of immigrants, and do not want total exclusion, but intelligent selection and regulation."

"The present immigration laws of the United States are admirable for the protection of the United States against those who are physically and mentally defective as well as against all objectionable classes and conditions," said Senator Dillingham, the author of the measure. "Those who have not studied existing laws know but little regarding their breadth and character.

"But new problems have been presented as the result of changed conditions in the United States resulting from our peculiar and excessive industrial development and from the changed conditions which have been caused and accentuated as the result of the World War."

It is expected that the Immigration Committees of the two houses will take up these problems during the winter session, after giving the Dillingham measure an opportunity to show how it works.

The Six-Hour Day in Industry

Presenting Lord Leverhulme's Theory of the Six-Hour Day with Analytical and Critical Comments.

BY J. H. FRIEDEL,

EDITOR, DEPARTMENT OF BUSINESS INFORMATION, "100%."

Next to the question of wages, the problem most provocative of dispute between employer and employee is that of hours of work. Wages and hours are undoubtedly the two most prolific causes of labor disputes. Thus of the 36,757 strikes in the United States between the years 1881 and 1905 inclusive 52.6%, or somewhat over one-half, arose out of wage questions, while 12.4%, or about one-eighth, were due to disagreements over hours. During the years 1916-1919 inclusive, a similar condition is indicated. In this four-year period no less than 14,490 strikes took place in the United States. In 61%, or over three-fifths of these, wages and hours, either singly or combined, played a prominent part. During recent years labor has tended to center its attention more and more on reductions in the hours of work, the justification for this position being that if the hours were shortened the wages would take care of themselves. The attitude has found expression in the slogan of the trade unions that—

Whether you work by the hour,
Or whether you work by the day,
Decreasing the hours of labor
Increases the size of the pay."

During the last few years there has been an insistent propaganda for the so-called shorter work-day. At first this shorter work-day was generally construed to mean an eight-hour day. Eight hours for work, eight hours for recreation and education and eight hours for sleep was urged as an ideal division. The progress of the eight hour day movement was much slower, however, than had been anticipated by its proponents, with the result that labor leaders, like Samuel Gompers, began to urge *the seven-hour day* in the hope that thereby a compromise might be effected on an eight-hour day which was their real object.

Recent Attention to Six-Hour Day.

Recently attention has been given to the *six-hour day* for American factories. This six-hour day has been urged rather on the ground that it will cure unemployment than that it will increase production which is of course a dominant consideration in reductions in work-schedules. Thus at the last Annual Convention of the American Federation of Labor, in June, 1920, the Committee on a Shorter Work-day reported as follows:

"There is no doubt but that in the near future many organizations will determine that in order to take care of all of their members gaining a livelihood by employment at their trade it will be necessary to inaugurate a six-hour day.

"Your Committee, therefore, recommends further that the Executive Council lend its assistance in the fullest degree to any organization seeking to establish a shorter work-day that will provide for the employment of all its members. The organization itself must necessarily be the judge of what should be the length of the work-day in the industry over which it has jurisdiction. When it has decided and established its claim to shorter hours, no matter what they may be, then the American Federation of Labor should lend its fullest assistance and your Committee so recommends."

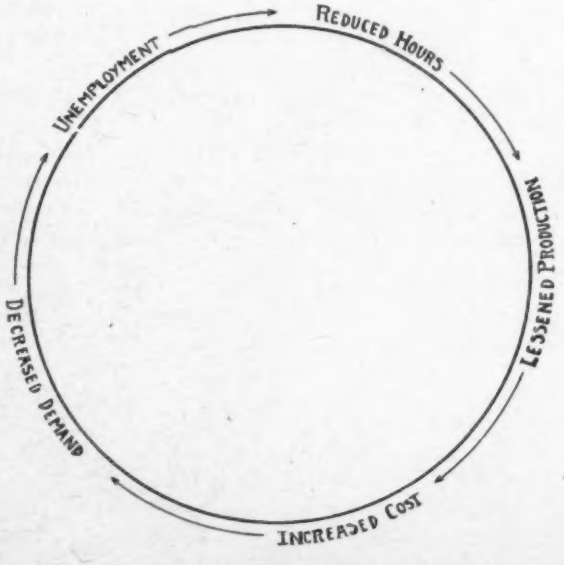
Conditions since June, 1920, have altered so considerably that organized labor's position has weakened seriously, but the Committee's report is none the less of interest because it indicates the lines along which part of our labor force is thinking.

Organized Labor's Theory.

Organized labor's theory of the shorter work-day as a cure for unemployment is based on the belief that the world's demand for goods is a fixed lump or amount. When this demand for goods has been met, there is no longer a desire for goods or for the labor that produces them. In other words, when the market has been glutted, the demand for labor ceases. "Therefore," says labor "it is in our interest to work slowly—restrict output if need be—and work shorter hours, for only in that way can the amount of work to be done be lengthened to the maximum." Thus labor attempts to justify restriction of output and the shorter work-day on the score that only in that way can it rest assured that it will not work itself out of a job.

Its Fallacious Basis.

This reasoning is, however, fallacious. Shorter hours invariably lead to lower production, lower production means higher cost, higher cost means higher prices, higher prices signifies a shrinkage in the demand for the goods, and lessened demand results in a fall in the need for labor, with consequent unemployment. In other words, shorter hours are not a cure for unemployment but rather a direct contributing cause to it. The vicious circle to which labor's fallacious reasoning leads may be depicted as in the illustration:



The Six-Hour Day of Lord Leverhulme.

The six-hour day has been urged persistently by Lord Leverhulme for over four years. Lord Leverhulme is one of Great Britain's captains of industry and one of its wealthiest citizens. He is the head of a corporation having 93 constituent companies and plants which give employment to about 100,000 workmen. Moreover, he does not advocate the six-hour day for any philanthropic reasons, but rather because he believes that it will increase profits for the employer and create better conditions of work for the employee. " Apolicy of enlightened self-interest," is what he calls it. His six-hour day proposal is thus presented as a practical proposition for consideration by practical men. It does not emanate as the enthusiastic proposal of a visionary. For this reason it merits attention. Moreover, Lord Leverhulme has suggested the installation of the six-hour day in soap manufacturing, coal mining and other industries in which the overhead is excessive. He specifically enumerates *the textile industries* among those few industries where, in his opinion, the six-hour day can be immediately introduced, and he urges that its introduction here is advisable and practicable. For this reason, Lord Leverhulme's proposal merits the serious consideration of readers of COTTON.

By the six-hour day Lord Leverhulme does not mean an actual six-hour day for factories, but a six-hour shift system with three or four consecutive shifts. In other words the aim is to secure continuous operation of the plant. "I believe, in short, in sweating the machine," says Lord Leverhulme, "and not the man. I would like to make the man's work easier and the machine's work harder."

Lord Leverhulme gives seven main reasons for favoring the six-hour day. Without attempting any critical analysis of the validity of these reasons let us first ascertain what they are. His reasons may be stated briefly as follows:

(1) He holds that the six-hour day is necessary for the reason that it will conserve national health.

(2) The six-hour day, in his opinion, will decrease industrial unrest.

(3) He states that it will give the worker needed time for education and recreation.

(4) He believes that it will increase wages and thereby raise the standard of living among the workers.

(5) He urges that it will increase production and thereby lower the unit cost of manufacture.

(6) He maintains that it will result in increased demand for labor, and thereby assure work for all.

(7) He thinks that it will increase the demand for machinery and thus increase the national wealth.

A more intensive analysis of these reasons will undoubtedly be helpful in giving a fuller understanding of Lord Leverhulme's reasons for favoring the six-hour day and what he anticipates will be gained from its introduction.

1. Lord Leverhulme states that the six-hour day with several shifts is practically becoming a necessity since modern factory work is so monotonous in character that the "deadening effect of modern factory life" not only induces fatigue and lack of interest but is a direct incentive to bad work, poor health, carelessness and even direct unrest. "To get the work condensed into six hours would enable us to produce not only everything we require but to produce it without fatigue." In other words, under the six-hour day the worker will be in the factory only during his maximum efficiency. In this connection he points out that "the six-hour day is already a most urgent and much-needed condition of working hours in all industries where women and girls are employed. It must be remembered that a large proportion of women engaged in industries, whether married or single, have, unlike their fathers and brothers, some housework to do as well as their work in industrial employment. And these hours of housework and the resulting fatigue must be remembered when considering their hours of work in the factory, workshop, or office."

2. He argues that the effect of the inauguration of the six-hour day will be a marked reduction in industrial unrest. The monotony of highly specialized or repetitive work and the limitation of freedom of activity which this condition entails has generally been accepted as a cause inducing dissatisfaction. Such dissatisfaction, he thinks, will be done away with through the six-hour day. "We can get into a working day of six hours all the work we are capable of when that work is monotonous—attending machinery and general work in a factory. There is no comparison between work of that kind and many other occupations, my own, for instance, full of interest; so that I can go on working from early morning until late at night because it is full of interest. I am confident if you put me to work in a factory I should chafe because I could do the work comfortably in six hours and I should be chained there for eight."

3. The six-hour day, he holds, will give those who work, particularly the younger persons, an opportunity for self-improvement. "It would give us," he says, "this great national advantage; it would solve the education question for the boy and girl on first leaving school; it would solve the question of physical training; it would solve the question of military training, so that we could have a trained citizen army; and it would solve the question of the outlook on life of our workers. Can you fancy anything more sordid than the life of a boy or girl who goes into the factory today under the stress of modern conditions? His father probably went at eight years of age, he goes at 14, and from then to 70 he sees nothing but a few holidays, so few that he scarcely knows how to systematize and make the most of them; and his horizon, his whole outlook on life, is stunted and he cannot live the life he was intended to live."

4. Lord Leverhulme is firm in the belief that the six-hour day will enable him to increase wages. "I want to reduce the cost of production," he states, "so that I can increase wages, and that can be done only by increasing the output. The modern buildings, the plant and machinery of any business so costly even before the war and so much more costly now, run into such huge amounts that the overhead charges distributed over a limited output will kill any industry. But double the output and you at the same time lower the cost of production, thus bringing the business to a paying basis and creating a fund for increasing wages. This is the basis of my theory of the six-hour day."

5. He claims that the six-hour day will result in lowered production costs. Since this is essentially the crux of his argument, it may be well to examine this in some detail. Applying his argument to the textile industries he says: "In the textile industries and all others where the cost of overhead charges, such as interest on capital, salaries of partners and managers, repairs and renewals, depreciation, rates and taxes (omitting all taxes on income or

The active head of a well known mill to whom an advance proof of this article was submitted, comments as follows:

"Viewed from a practical standpoint it is altogether out of the question. The simple reason is that capital has found its way into industrial plants of all kinds in proportion as there appeared to be a market for the products and a labor supply to operate the plants, based on the usual working day. If a twenty-four hour operation were decided upon it would require the scrapping of about half the plants in the country. Otherwise there would be nobody to operate them. * * * I believe it would be well to add a paragraph 'asking to know', as the Japanese school boy said, what would become of all these other plants if all the operatives were drawn into half of them for day and night operation? Also, how it could help a man's health to work at night, which would be necessary to 'sweat the machines' to the maximum extent?"

profits) is about equal to the cost for weekly wages, the change from a 48-hour week to a 72-hour week of two shifts of 36 hours each would affect the cost of production somewhat as follows:

"Working a 48-hour week and assuming that the product was 1000 items per week at a cost of £1000 per week for wages, the resulting total cost of production per item, exclusive of raw material and such other proportionate costs as would always be in exact relation to volume produced, would be 40s. per item.

"If such textile or other factories adopted the six-hour working day system they would work 72 hours per week in two shifts of 36 hours each shift per week, and assuming that no increase of production per hour worked was achieved, which need not necessarily be the case, and that the wages paid for a 36-hour week were the same as for a 48-hour week, which must always necessarily be the case, then the resulting product would be 1500 items. The cost of production for overhead charges would not seriously be affected, as machinery invariably becomes obsolete before it is worn out, and fixed capital in plant, buildings, and machinery would be the same, the cost of overhead charges would again be £2000, or a total of £3000 for 1500 items, or again a cost, exclusive of raw materials, of 40s. per item.

"But," he continues, "supposing, as one is justified in doing by past and present experience, that the unfatigued worker could produce as much in six hours as formerly was produced in eight hours, then the figures as to cost of production would be somewhat the following and show a great gain in economical production: 2000 items would then be produced in a 72-hour week of two shifts of 36 hours, each shift at a cost of £1000 for overhead charges and of £2000 for wages, a total of £3000, or of 30s. per item, which would be a reduction of 25 per cent on cost of production compared with the cost when working a 48-hour week." The savings which would accrue from such lower unit production costs might be used, he suggests, either to increase wages so that the men would thus be able to earn more under a 36-hour week than under a 48, or to reduce the selling price of the product and so permit the consumer to share in the gain and benefit by a lower cost of living.

6. The shorter work-day, with several shifts where before there was only one, would obviously result in more positions being open. This greater demand for labor would, he argues, result in a great national advantage; it would make possible full-time employment for all who were physically able and willing to work. The fear of unemployment which is today a great source of unrest would thus be removed.

7. The six-hour day, he states also, will increase the demand for machinery with a resultant gain in the national wealth. "If a machine wears out in half the present normal time the world is richer, for a new machine has to be made to replace it and that means pay for his work; a new machine sold for more money for the manufacturer, each becomes more dividends for the stockholders. But if a man wears out in half the time the world is poorer and that needs no demonstration."

These are the main reasons which Lord Leverhulme advances in behalf of his six-hour plan and the validity of these will of necessity determine the acceptance or disapproval of the idea which he has proposed. For the moment it may be noted that *the six-hour day has not yet been introduced* in any of Lord Leverhulme's plants. Nor is its immediate introduction at all likely. Two important conditions are responsible for this.

Objections of the Trade Unions.

First, is the strenuous objection of the trade unions. Trade unionism is, of course, a much stronger force in Great Britain than it is in the United States. Almost 50% of British labor is comprised in trade unions, and in some industries, in shipbuilding, mining and transportation, for example, between 90% and 100% of the labor is organized. Collective bargaining is a recognized feature, and Lord Leverhulme like other large employers, deals with his employees through their trade union representatives. When the six-hour day proposition was presented to the unions they disapproved it. The unions felt that the two-shift system would result in greater total production with a consequent decreased demand for labor. In their opinion, the six-hour shift system would result in a man's working himself out of a job. The company suggested that on the contrary the plan would increase output, and that this increased output would mean lower costs, with consequent lower prices, greater demand for goods and therefore for labor. The unions were, however, firm.

Objections of the Labor Party.

Second, difficulty was encountered in the existing legislation governing the hours of labor in factories. Under the British Factory Act no factory may be open for more than twelve hours in any one day. The six-hour day, with several shifts, thus necessitated the enactment of new legislation. The British Cabinet was not averse and a bill was introduced, sponsored by the Home Office. The British Labor Party, which today holds the position of the minority party in Parliament at once objected, and the objection was so marked that the bill was withdrawn. The Labor Party objected on the score that the six-hour shift system would augment the profits of the capitalists without commensurate reward for the laborers. The capitalists, it held, were

wealthy enough. It was opposed to increasing their wealth and thereby further strengthening their position.

Thus, the six-hour shift system has not been introduced, and because of the opposition of the trade unions and of the Labor Party its introduction is unlikely. Certainly, however, Lord Leverhulme's proposal, which has been urged by him with much spirit and with much publicity, has been effective in centering attention on the shorter work-day, particularly on the six-hour day with but one shift. The Labor Party itself indicated its willingness to accept a six-hour day but it would have no shift system. Lord Leverhulme's proposal, in addition to stimulating discussion, has, it may be frankly recognized, stimulated no little amount of unrest.

Other Considerations.

At best the problem rests on issues which are strongly controversial. Will production be increased? Lord Leverhulme answers in the affirmative, but he has made no experiment with the six-hour shift system, and such experiments as have been made in the United States recently with shorter hours *have invariably indicated a decline in production about in proportion to the reduction in hours.* In the textile industries, where the machine and not the hand controls, reductions in hours have been followed by reductions in output. Whether the health of the worker will be improved, or whether he will use his greater leisure to advantage, is also a matter of doubt. The British Inspector of Factories and Workshops in his report for the year 1919 states frankly that reductions in hours to 48 and less, which have taken place in Great Britain during the last few years, have as yet shown no definite influences on health. In other countries, as in Germany, where the eight-hour day has been introduced recently by law, it has been found that the men have used their leisure time to secure other work, so that many persons now work at two jobs instead of one. A further consideration in the United States would be as to where the additional men for the various shifts would be secured. At the moment there is a general slackening in industry, but normally no great overflow of labor exists. An extensive introduction of the six-hour shift system would mean the addition of many millions of workers. Where will these be obtained? These matters must, of course, all be considered.

Itmay be noted further that Lord Leverhulme has been urging the six-hour day since 1917. In fact, his statements were so far-reaching and so definite that the impression soon went about that the six-hour day had actually been installed in his own plants. Even his own stockholders began to believe that the Lever Brothers Works had been put on a shorter work schedule. This forced a statement from Lord Leverhulme at the annual meeting of the stockholders in 1919, in which he explained that the six-hour day has not yet been put into effect. Later, in the same year, and again in 1920, the rumor spread once more. The fact remains, however, that the six-hour day has not yet been introduced in any of the works, either in England or in the United States. It is quite clear, therefore, that Lord Leverhulme has no personal experience by which to justify any of the claims that he has made in behalf of the six-hour day.

It must also be remembered that the industry in which Lord Leverhulme is most interested—soap manufacturing—is one in which continuous processes dominate. The raw material for making the soap is placed in large vats where it is boiled and treated chemically for several days, after which the soap is drained, placed in pans, cooled, cut to the desired size, packed and shipped. The overhead is excessively high. It may be fairly questioned whether the special character of this industry is not such that comparisons can fairly be made with other industries, such as textile manufacturing.

Furthermore, there seems to be no clearness of expression as to what Lord Leverhulme means by "overhead." His statements are not very explicit on this point, and while he says that the use and introduction of two or more shifts will not increase the overhead, one is moved to doubt his statement. Certainly the charges for supervision will be increased; more foremen and managerial assistants will be required. Is not this always a large item in overhead, and will it not increase measurably? Lord Leverhulme's argument here seems to be purely hypothetical, and his claim that the shorter work day will lower unit production costs must for the present be regarded in the light of the Scotch verdict "not proven."

It should also be noted that Lord Leverhulme's conclusions lead to the erroneous belief that one schedule of hours may be applied to all industry. This is the fallacy that trade unionism has preached for a long time. Actually no single schedule of hours is applicable to all industry. The minimum schedule of hours with which maximum output can be secured will, of necessity, vary with each industry, depending on such factors as the amount of hand-work, the amount of automatic machine work, the organization of the industry, the speed of machinery, the size of the establishments, etc. In cotton manufacturing, where the machine practically dominates and sets the pace for the worker, it is apparent that the largest output is secured when the speed of the machinery is at its greatest practicable point. This, of course, must be a speed such as not to cause undue breakage of yarn. Carried beyond this speed, the breakage is so great that loss in output is inevitable. For this reason a cotton manufacturing establishment already running its machinery at maximum efficiency will invariably experience a reduction in output in proportion to the amount of time by which the work schedule is decreased.

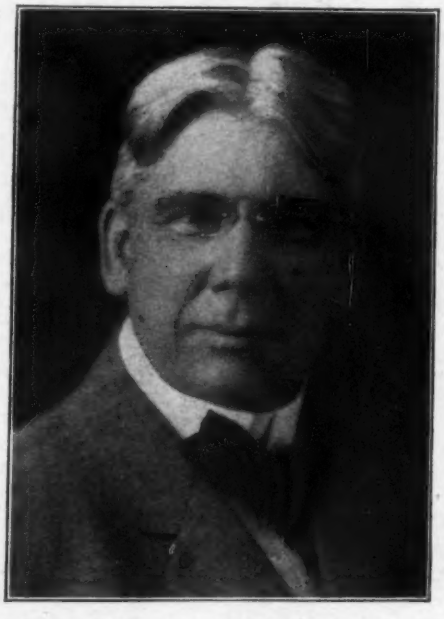
The Allis-Chalmers Manufacturing Company have announced through J. R. Jeffrey, manager, Electrical Department, a further extension in their policy of unqualified service to the textile industry in the appointment of H. F. Janssen as textile sales engineer. Mr. Janssen, who has been identified with Allis-Chalmers products for a number of years, and has given special attention to the power requirements of the textile industry, will make his headquarters at the Philadelphia office of the company, 807 Franklin Trust Building and will travel the entire eastern section of the country.

Power users in the textile industry are familiar with the extensive line of motors, generators, etc., which the Allis-Chalmers Manufacturing Company build for special service in textile mills and the company's development in individual motor drives has gained a wide and favorable reputation.

The Second World Cotton Conference

The Second World Cotton Conference will be held in Liverpool and Manchester, England, June 13 to 22, inclusive. As was the case at the first Conference held at New Orleans in October, 1919, this assembly will bring together representatives of every phase of the cotton industry and should result in a real achievement in solving many of the problems now facing all cotton interests.

This assembly of the cotton industry in England next month is expected to be fruitful of many results which will benefit the industry as a whole, and also each representative part of the industry. It was to be expected that there would be at the first conference in 1919 the impediment of effecting an organization, and some time was necessarily used and some effort expended in this work. The Second World Cotton Conference, however, will enter upon its work as a perfected organization, the work of each committee has been definitely outlined and is generally understood, and a program which should be of vital interest to the members of each of the fourteen groups of delegates has been arranged.



RUFUS R. WILSON, GENERAL SECRETARY.

Those who have the work in charge have for months been diligently devoting their time and energy to the formation of plans that will insure a most successful and beneficial meeting—one that will be carried out without a hitch—selecting the best ideas and culling those which seemed to be the least important or which seemed to have insuperable obstacles in the path of present success, and drawing upon their experience with the first Conference to aid toward this end. The results of their efforts will doubtless be manifest when the organization gathers for its second assembly in June.

There are many weighty economic questions and difficulties before the industry at the present time, and more so than ever before, probably, there is an increasing need for certain drastic changes to be made in the methods in vogue of handling cotton and its products; there are many antiquated practices to reform, many prejudices to overcome. To readjust inefficient methods, to clarify differences and difficulties between respective groups of the industry, to discuss problems from a world viewpoint and to establish successful administration and operation—this, in part, is the object and purpose of the World Cotton Conference.

Furthermore, through the mutual intercourse and personal contact at the 1919 Conference, close and cordial relations between members of the different groups were no doubt established and a spirit of hearty cooperation aroused. Therefore, the delegates attending the Second Conference will attend with an enthusiasm born of the knowledge of the value of coordinated effort and a realization that the welfare of each unit is best served by that which benefits the industry as a whole. It is the further aim of the Conference to develop this cooperative spirit among its members.

The American delegates to the Conference and their friends will leave New York City on June 1, on the White Star liner, *Adriatic*, one of the largest and finest steamers in the Atlantic service. It is expected that, leaving New York on June 1, the *Adriatic* will land its passengers at Southampton on June 10, from which point special train service will be provided to Liverpool and Manchester, where the sessions of the Conference will be held.

On Sunday, June 12, a preliminary meeting of the executive committee of the Conference will be held at the Adelphi Hotel, in Liverpool. Fuller E. Callaway, vice-president of the Conference and chairman of the executive committee, sailed on April 20 for Europe and will visit the French Riviera and other points before this time, but is expected to reach Liverpool in time for this meeting.

The entertainment of the delegates from America and other countries will begin on the evening of June 13, the first day of the Conference, when an official reception will be accorded the delegates by the Right Honorable Lord Mayor of Liverpool. It is also planned that a garden party will be arranged during the stay of the delegates in Liverpool.

Every afternoon, both at Liverpool and at Manchester, a reception room will be open at some center, at which members of the Ladies Committee of the British Hospitality Committee will meet the ladies accompanying delegates, and tea will be served between four and five-thirty o'clock. These teas will probably be held at the Adelphi in Liverpool and at the Midland in Manchester. Lady Emmott is Chairman of the Ladies' Committee.

Wednesday, June 15, will be devoted entirely to the entertainment of the visiting delegates by Liverpool organizations, there being no sessions of the Conference on this day. A visit is planned to the Cotton Industrial Research Laboratory, and a trip up the Mersey and visits to Port Sunlight, Cammell Laird Shipbuilding plant and Dock Board Warehouses are included in the proposed entertainment. In addition, it is expected that the various Liverpool clubs, including the golf clubs, will make delegates to the Conference honorary members of their organizations during the period of their visit, giving them access to all the facilities of their club houses, links, etc. A special guide book of Liverpool and the surrounding district is being prepared with reference maps to assist delegates while in the city.

On Wednesday evening a banquet will be held for the delegates, at which a prominent member of Parliament, possibly a member of the cabinet, will speak.

After three days of meetings and entertainment at Liverpool, the Conference will remove to Manchester, where the fifth session of the Conference will be held on the morning of Thursday, June 16. On Thursday evening, the Right Honorable Lord Mayor of Manchester will hold a reception at the town hall in Manchester, which delegates and ladies accompanying them will be invited to attend. Arrangements have already been made with a number of the Manchester city clubs and golf clubs, whereby delegates will be made honorary members of such clubs for the period of their visit. The directors of the Manchester Royal Exchange have had prepared a special membership card, suitably engraved, which will be presented to each visiting delegate, making him an honorary member of the exchange while he is in the city. As in Liverpool, a special guide book with reference maps is being prepared, containing details of historical interest in regard to Manchester. This book will further give a map of Lancashire

GEORGE H. LANIER.

showing the number of spindles and looms in the various towns, and also indicating the best methods of reaching these points.

"Manchester and the World Cotton Conference," the article appearing upon another page of this issue, gives some interesting information concerning the city of Manchester and its famous Ship Canal, an inspection of which is on the program of entertainment during the Conference.

Sectional and private entertainment is being arranged for in both Liverpool and Manchester. For example, spinners will be invited to visit certain Oldham mills during their stay in England, and to have lunch with the Oldham Federation of Master Cotton Spinners.

Saturday, Sunday and Monday, June 18, 19 and 20, will be devoted to the entertainment of the delegates by Manchester organizations. On Monday there will be visits to the Cotton Industrial Research Laboratory, the Manchester Ship Canal, Trafford Park Industrial Estate, Textile Machinist Works and the College of Technology. At some of these places lunch will be served to the delegates who make these visits.

A motor transport committee has been formed by the entertainment committees in Liverpool and Manchester, it is announced, and it is fully expected that a large number of automobiles will be available for use by the delegates.

Visits to Stratford-on-Avon, North Wales and the English Lakes will no doubt be arranged for the delegates during the week-end which will be spent in Manchester.

On Wednesday evening, June 22, a banquet, similar to the one held in Liverpool, will be tendered in Manchester, with speakers of equal prominence as those of the previous occasion. No effort has been spared by the Hospitality Committee of Liverpool and Manchester, it is stated, to make the social side of the Conference an unqualified and distinct success.

The Program.

The program of the Conference, which has been in the hands of a sub-committee composed of the president, general secretary, assistant secretary, and the chairman of the executive committee, with a few slight details to be worked out, follows:

Sunday, June 12.

8 P. M.—Meeting of Executive Committee, Adelphi Hotel, Liverpool.

Monday, June 13 (Liverpool)

FIRST SESSION.

10:15 A. M.—Addresses of welcome by the Right Honorable Lord Mayor of Liverpool and Colonel J. J. Shute, C.M.G., D.S.O.
Address by the Right Honorable Lord Emmott, G.C.M.G., G.B.E., President of the Conference.
Replies to addresses of welcome.
Announcement of Committees.

SECOND SESSION.

2:15 P. M.—"How Can Production Best be Increased?" David R. Coker, Hartsville, South Carolina.
"Cotton Growing within the British Empire," W. B. Himbury, British Cotton Growing Association.
Recommendations referred to the Committee on the Production of Cotton.

Tuesday, June 14

THIRD SESSION.

10:15 A. M.—"Universal Standards for American Cotton." William R. Meadows, Department of Agriculture, Washington, D. C.
"The Purchase and Sale of Cotton." A Bryce Muir, Liverpool Cotton Association.
Recommendations referred to the Committee on the Purchase and Sale of Cotton.

FOURTH SESSION.

2:15 P. M.—"Financing Cotton Importing." Sir James Hope Simpson, J. P., British Bankers Association.
"Financing American Cotton for European Use," Willis H. Booth, New York, N. Y.
Recommendations referred to Committee on Banking and Insurance.

Wednesday, June 15

Devoted to entertainment of delegates by Liverpool organizations.

Thursday, June 16 (Manchester)

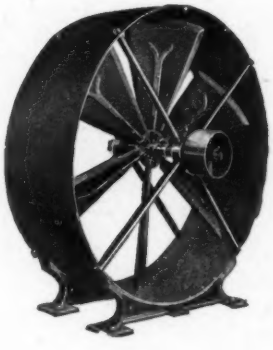
FIFTH SESSION.

10:15 A. M.—Address of welcome by the Right Honorable Lord Mayor of Manchester and the Chairman of the Manchester Royal Exchange.
Announcement of meeting places of committees and groups.
"Yarn and Cloth Contracts," John Taylor, Solicitor, Manchester, England.
"Humidity and Ventilation in Cotton Weaving Sheds," Frank Scudder, F.I.C., F.C.S., Manchester, England.
Recommendations referred to Committees on the Spinning and Manufacture of Cotton Goods and the Merchandising of Cotton Products.

(*Continued on page* 557.)

Are You Prepared for

Hot Weather?

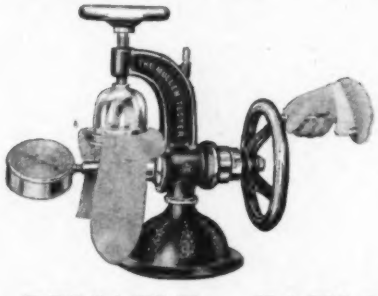


Our Fans are an Antidote Against Heat!

All steel construction
Inexpensive to install
Small power consumption
Adjustable and reversible blades

The Jumbo Mullen Tester

The standard in many mills for testing all kinds of fabrics.



ACCURATE — RELIABLE — EASY TO OPERATE

The only machine for getting the Bursting strength in lbs. per square inch.

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS.

Soap

BY WILLIAM B. NANSON.

Cocoanut and Palm Kernel Oils.

Cocoanut and palm kernel oils differ from all fatty bodies employed in soap manufacture in the greater quantity of alkali required for saponification, in the greater quantity of salt required for graining, and in the greater yield of soap produced of a quality that permits of the greatest amount of hydration and filling. Pure cocoanut oil soap is white, brittle and hard. The oil is a valuable addition to cotton seed oil and tallow and yields a soap possessing qualities superior to that possessed by either stock alone. It enters into combination with alkali with extreme ease, which property especially adapts it for soap manufacture by the cold process.

During saponification considerable heat is evolved, and saponification when once begun ensues with such rapidity that the contents of the kettle, unless carefully watched, will boil over. On the stock change (stock saponification) difficulty is often experienced in working with cocoanut oil, or a mixture of oils containing cocoanut, in the soap mass becoming thick. This is due to the high absorption of the water consequent upon rapid saponification and is overcome by retarding the rate of combination of caustic alkali and oil. This is best effected by the addition of brine when the soap mass shows signs of becoming thick. It may also be avoided by adding the oil slowly to the caustic alkali already in the kettle, at the same time boiling vigorously.

Cocoanut oil combines with weak and strong caustic lyes with equal facility, but in practice, in the boiling of settled soap, a density of from 32 to 42 degrees Tw. is commonly used. Cocoanut oil soap, when hot, is very fluid, smooth and transparent; when cold, it becomes so hard as to be cut only with difficulty. It dissolves readily in water yielding a quickly formed, profuse, but not very permanent lather. It is caustic to the tongue even though no free alkali is present, and when used for toilet purposes in excess of actual requirements excoriates and reddens the skin. If cocoanut oil is not completely saponified, the soap made from it soon becomes rancid and odorous. It dissolves freely in salt water and is the fatty basis of the so-called marine or salt water soaps.

The complex composition of cocoanut oil suffices to explain the peculiarities of its behavior towards saponifying agents and the properties of the soap made from it. Cocoanut and palm kernel oils contain a greater variety and quantity of glycerides of fatty acids of low molecular weight than any other soap stock.

As will be seen by referring to Table A (in the April number), these bodies possess a higher alkali absorption, yield a greater percentage of glycerin on saponification, are more soluble in water when free and also when combined with alkali, and in general possess less stable chemical properties than do similar bodies of higher molecular weight which occur commercially as soap stock.

Saponification of Palm Oil.

Palm oil, of which palmitin is the chief glyceride, is of limited use as a soap stock in this country. It is used chiefly as an ingredient of certain toilet soap bases, for which purpose it is well adapted by its perfume and to disguise the odor of rosin in excessively rosined soap. In England and in continental Europe it replaces tallow to a large degree.

Sodium palminate so closely resembles sodium stearate in its chemical properties that the statements concerning the properties of the latter salt are directly applicable to it.

Palm oil saponifies very readily, owing to the high percentage of free fatty acids characteristic of the oil.

I would say here that palm oil is expressed from the fleshy part of the fruit of the palm tree, the *Elacis Guineensis* and the *Elacis Melanococca* native along the west coast of Africa. It is of butter-like to tallowy consistency, varying in color from orange to dark red, and possesses a characteristic violet-like odor. The oil is bleached on exposure to the air; chemical bleaching removes the odor as well. The color and odor persist in the soap made from it. Its chief constituents are free palmitic acid, palmitin and olein. The behavior of palm oil in the soap kettle closely resembles that of tallow.

Palm kernel oil on the other hand is expressed from the kernel of the same nuts from which the palm oil is expressed but in its chemical composition and reactions with saponifying agents it is closely allied with cocoanut oil.

Saponification of Olive Oil.

Olive oil is expressed from the pulp or fleshy portion of the fruit of the olive tree. It is native in the Mediterranean countries where it has been employed from the earliest times as the fatty base of "Castile" or "Marseilles" soap. The use of olive oil for this purpose has of late years been largely displaced by the cheaper cottonseed oil, large quantities of the latter being exported from the United States to Marseilles for this purpose. Olive oil is used chiefly as an edible oil and inferior grades only are used in the soap kettle. It contains about 72 per cent of olein and 28 per cent of palmitin. It behaves like cottonseed oil towards saponifying agents.

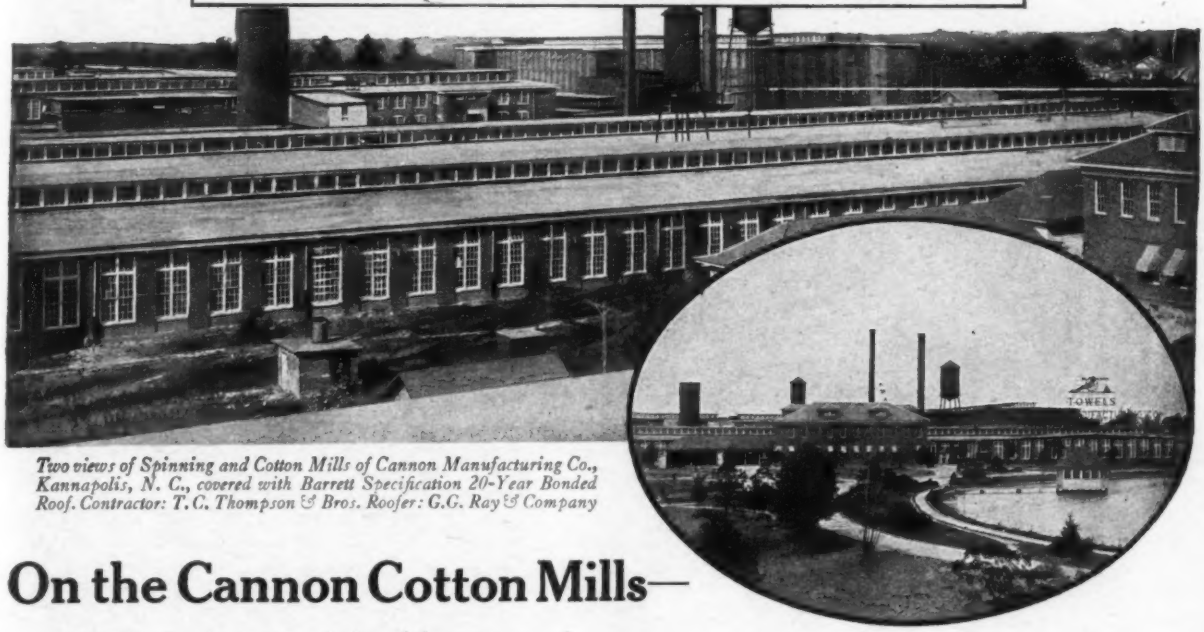
Olive oil receives two pressings for edible oils, but the press cake after the second pressing still contains a considerable quantity of oil, which, when recovered, constitutes the olive oil "foots" of commerce from which the castile soap is made.

The oil remaining in the press cake after the second pressing may be recovered either by washing with water or extracted with a volatile solvent such as bisulphide of carbon, but when recovered it is of such inferior quality as to be suitable only for soap and other industrial purposes. It is fairly fluid, of dark green color to black, and of disagreeable odor and the washed foots are superior in quality to the extracts. Soap made from olive oil foots retains the green color of the recovered oil; the color, however, gradually bleaches out on exposure.

Pure olive oil soap is white and very mild in its detersive action. It is composed chiefly, if caustic soda has been used to effect saponification, of sodium oleate. It is especially adapted to use in the textile industry.

Barrett Specification Roofs

Bonded for 20 and 10 Years



Two views of Spinning and Cotton Mills of Cannon Manufacturing Co., Kannapolis, N. C., covered with Barrett Specification 20-Year Bonded Roof. Contractor: T. C. Thompson & Bros. Roofer: G. G. Ray & Company

On the Cannon Cotton Mills—

AMONG the important industrial concerns of the country that have standardized on Barrett Specification Roofs, is the great Cannon Manufacturing Company which controls the largest group of cotton mills in the South with a total of over 600,000 spindles.

On this company's Kannapolis, N. C., plant alone, more than 5,000 squares—nearly 12 acres—of Barrett Specification Roofs have been constructed during the last eight years.

Of this vast roof area, 3,500 squares carry the 20-Year Barrett Surety Bond Guarantee, which absolutely protects the owner from all roof-repair expense for 20 years from date of completion.

The decision of the Cannon Manufacturing Company to use Barrett Specification Roofs exclusively on all flat-roofed buildings was based on many years' experience with this type of roof construction.

Not only are these roofs by far the most economical per year of service, but they also offer a degree of fire protection which is not exceeded by any other built-up flat roof. They carry the base rate of fire insurance.

The Barrett Specification Type "AA" 20-Year Bonded Roof represents the most permanent roof covering it is possible to construct, and while we bond it for 20 years only, we can name many roofs of this type that have been in service over 40 years and are still in good condition.

Where the character of the building does not justify a roof of such extreme length of service, we recommend the Barrett Specification Type "A" Roof, bonded for 10 years. Both roofs are built of the same high grade materials, the only difference being in the quantity used.

Before specifying or closing contract for a Barrett Specification Bonded Roof, be sure to read carefully all the stipulations in the specifications.

Full details regarding these Bonded Roofs and copies of The Barrett Specification sent free on request.

The Barrett Company

New York	Chicago	Philadelphia	Boston	St. Louis
Cleveland	Cincinnati	Pittsburgh	Detroit	New Orleans
Birmingham	Kansas City	Minneapolis	Dallas	Nashville
Syracuse	Seattle	Peoria	Atlanta	Duluth
Salt Lake City	Bangor	Washington	Johnstown	Lebanon
Youngstown	Milwaukee	Toledo	Columbus	Richmond
Latrobe	Bethlehem	Elizabeth	Buffalo	Baltimore
Omaha	Houston	Denver	Jacksonville	

THE BARRETT COMPANY, LIMITED: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

Saponification of Red Oil.

Red oil is a by-product obtained in the manufacture of candles from tallow and consists almost wholly of oleic acid. It derives its name from the color that the oil acquires upon ageing, but chiefly due to contact with the iron. It occurs in two grades, viz., "saponified" and "distilled" red oil.

Saponified red oil is obtained by either acid, lime or aqueous saponification under pressure, in specially constructed tanks called autoclaves or digesters. The mixed fatty acids resulting from saponification are resolved roughly into stearic acid and oleic acids by pressure through filter cloths. The stearic acid yet retained in the liquid portion is separated by chilling, whereby the commercial oleic acid or red oil is obtained.

Distilled red oil is obtained by distillation of the mixed fatty acids with steam. Red oil varies somewhat in its composition, according to the method employed in its manufacture but the following analysis is a fair example:

Oleic acid	93.06 per cent
Oil	6.04 per cent
Hydrocarbons	.90 per cent
	100.00 per cent

Specific gravity .897. Turbid at 42 degrees F.

Red oil, or commercial oleic acid, being a stronger acid than carbon dioxide, can be saponified with soda ash. Red oil soap, sometimes called oleine soap, is practically identical in its composition and properties with olive oil soap and is, therefore, equally adapted to the cleansing of textiles.

Cottonseed Oil Soap Stock.

In the refining of crude cottonseed oil, the first step is to separate as quickly and as thoroughly as possible the foreign matter from the expressed crude oil. The residue obtained on settling or filtration is known as *settlings* or *foots*. The precipitate or residue obtained in this refining process is sometimes termed "soap stock" but is known to the cottonseed oil trade as *cottonseed foots*, under which name it is sold. The crude oil, after being freed from these settlings, is pumped into the first treatment tank, where it is agitated under increased temperature, with caustic soda lye of strength and proportion adapted to the quality of oil undergoing treatment. When sufficient time has elapsed for the complete absorption of the alkali, the agitation is ceased and the contents of the kettle is allowed to remain at rest, during which time the soap stock, formed by the combination of the free fatty acids with the caustic alkali, contaminated with the organic impurities of the soil, settles to the bottom. This precipitate obtained from the crude oil freed from settlings, on treatment with caustic soda lye, consists of soap and free oil mixed with mucilaginous and coloring matter. This mixture undergoes further treatment with caustic alkali whereby all the free oil is transformed into soap.

The finished soap is grained and subjected to further brine and alkali washings in order to obtain a product as free from odor and as light in color as possible. Cottonseed oil soap stock will be seen from this, therefore, to be essentially a soap. After it has been suitably purified and on the final settling, it is run while hot and in a semi-fluid condition into barrels.

Cottonseed oil soap stock, when in clean condition and as free as possible from coloring matter, is identical in composition with red oil soap and is adapted to the same technical uses. It should contain 50 per cent of fatty acid, in fact it is usually sold on this basis and anything less than 40 per cent is not considered merchantable.

It must be remembered, in connection with the use of cottonseed oil soap stock, that it is simply a soap, and unless in a very dehydrated condition does not admit of the yield common to all glyceride stock. It is simply an addition used with other mixtures on account of its cheapness.

Crutching and Fillers.

After the soap has been boiled and grained and settled it is introduced into a machine called a crutcher where it is crutched or stirred until it is thoroughly mixed and it is here that various fillers, some of which are purely adulterants, are incorporated into the soap.

Soda ash is sometimes used as a filler and is a valuable addition to some soaps where a strong detergent quality is desired. The soda ash is added to the soap in the crutcher in a strong solution of 62 degrees Tw. at a temperature of 155 degrees F. and well stirred in (not boiled in).

Saturated solutions of sodium carbonate (soda ash) when added in considerable amounts to any soap and particularly to soaps made from soft stock, which has been found to sweat more readily than soap made from firmer stock, will soon cause the soap to effloresce. This is a most disagreeable property and detracts greatly from the appearance of the product. Also, when added in greater quantity than the soap can assimilate, the soda ash tends to "grain" the soap. With heavily filled cheap soaps, this condition represents the limit of the addition; soda ash and other filling agents possessing detergent properties then become adulterants pure and simple.

Borax is a mild alkali and is a desirable filler for soap, but owing to its higher cost than soda ash its use is limited. Sodium silicate, next to soda ash, is the most extensively used filling agent. It possesses a detergent power, and when used with a due and honest regard to the price of the finished soap, it may be a valuable addition. On aging, soap filled with sodium silicate becomes very hard. When well mixed with the soap, a reasonable proportion greatly improves the appearance and allows a larger quantity of soda ash to be carried without the efflorescence that would soon be produced without its use.

While sodium silicate possesses detergent qualities it is used primarily as a cheapener. By the use of suitable proportions of solutions of soda ash and sodium silicate, the quality of laundry soap is greatly improved. The soap is made more durable from the hardness produced by the crystallization of the salts; also the rapid drying of the soap is retarded.

When used in excess in cheap soap, they not only permit the absorption of a larger amount of water than would otherwise be practicable, but also, when used in soap made from soft stock, they impart a firmness which, without their use, would not be possible without having previously transformed the product into a variety of boiled-down soaps.

Ground quartz or silica, marble dust, mineral soap stock, a petroleum residuum, starch and talcum are used as fillers. They are adulterants pure and simple. (See note at the foot of this article.)

Soap Powder.

Well made, settled, i. e., curd, non-resinous soap can be filled with upwards of 10 per cent of soda ash solution with good results. If this filling be increased in quantity

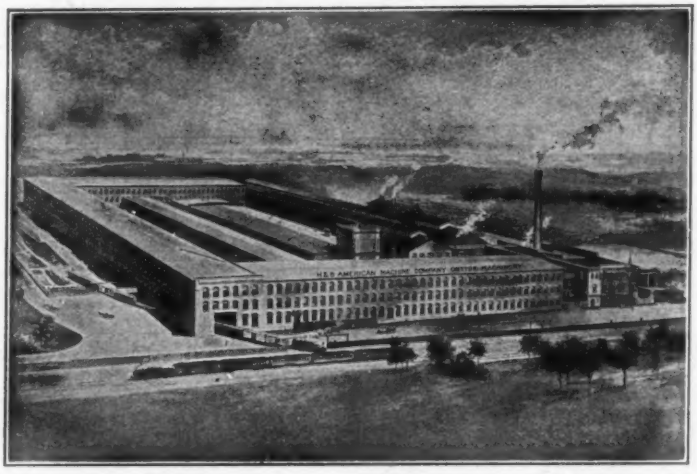
H & B AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

Southern Office Atlanta Trust Co. Bldg. Atlanta, Ga.

Opening and Picking Machinery

Card Room Machinery



Spinning Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

COTTON MACHINERY

until present in the mixture greatly in excess of the soap, we have the compound, which, when ground up into a finely divided powder, constitutes the soap or washing powder of commerce. Any glyceride soap stock is available for this purpose and if merely dessicated and unmixed is harmless enough but if above 10 per cent of dry soda ash, silicates, etc., are added, as is usually the case, it has nothing to recommend it and must be regarded as an adulterated soap.

This class of soap (powder) is often used with the idea of obtaining an effect something between that of a soap and a mild alkali. The same may be said of certain forms of soap paste which are occasionally seen. In general it is far better to use a good soap and make any necessary additions to it when dissolved for use.

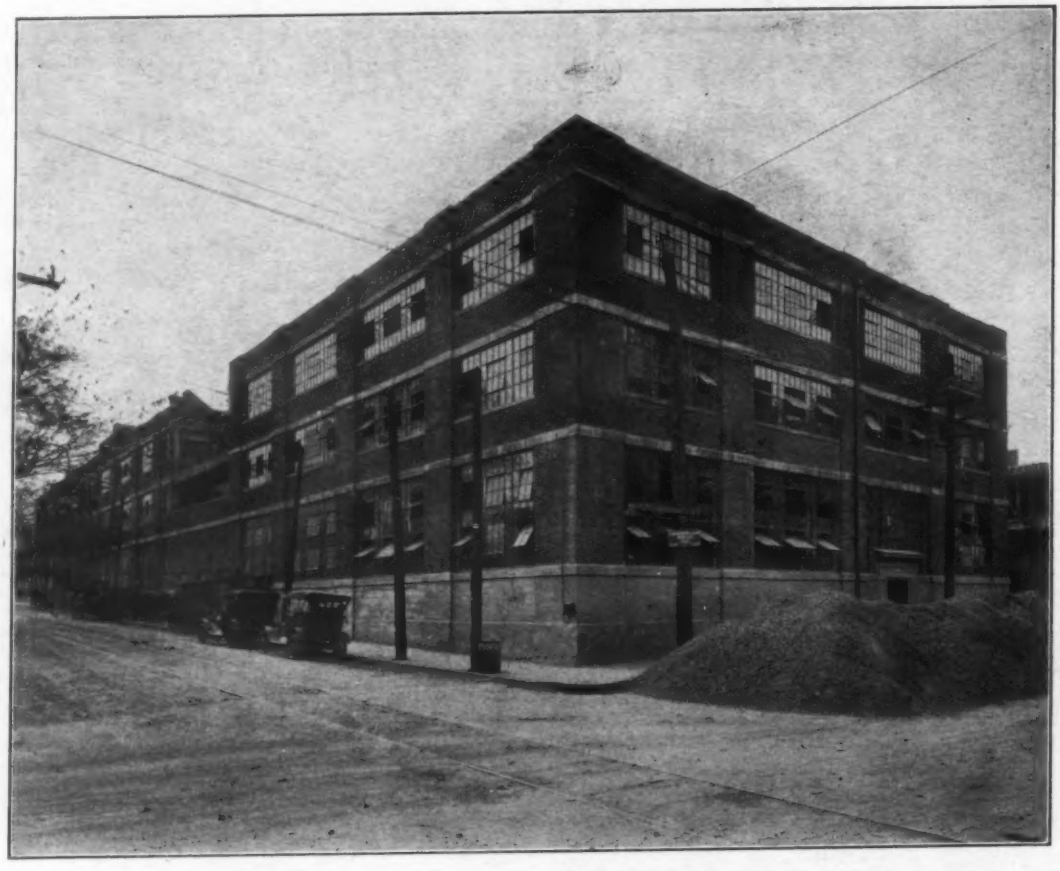
Soaps for special purposes are sometimes made by incorporating a quantity of benzine or similar solvent to aid in the removal of grease or stains. A solution of soap in benzine, known as Marienhohe saponin, has recently been successfully used. It forms an emusion with water, which readily lathers, and is completely soluble in benzine.

Salts of sulphoricinoleic acid enter into the composition of many patent detergent soaps, while monopole soap is prepared by heating sulphonated oils with a greater proportion than in the manufacture of Turkey red oil, the soap being boiled until it gelatinizes on cooling. It differs from Turkey red oil in being a perfectly saponified substance (J. S. C. I., 1898, p. 163). It is not precipitated by neutral salts, like ordinary soap, and does not separate on cooling. So-called bleaching soaps generally contain a small proportion of sodium peroxide or sometimes perborate, together with a considerable quantity of sodium carbonate.

In analyzing soap the fatty acids are sometimes returned as such and sometimes as anhydrides. In analysis, when the soap is decomposed with acid, hydration of the anhydrides takes place. Thus with sodium stearate 95.73 per cent of fatty acids are obtained, which, together with the alkali required for their neutralization, make up 103.14 per cent. But 568 parts of stearic acid correspond to only 550 parts of the anhydride in which form the acid exists in the soap, or 100 parts of the acid are equivalent to 97 parts of the anhydride. If the fatty acids found by analysis be multiplied by the factor 0.97 the result gives approximately the quantity of fatty anhydrides present.

This factor is not always quite accurate, but the exact value can always be determined from the mean molecular weight of the fatty acids, since it is always 9 less than this number. For purposes of comparison it is, as a rule, more convenient to return fatty acids as such, but it must not be forgotten that the total sum of the constituents will exceed 100. (See Table A, Part 3, April number.) The determination of total alkali alone is of little value in judging a soap, since obviously everything depends upon whether it is free or combined. The combined alkali is, however, a very valuable criterion. Fatty acids should, similarly, also be separated from the free fat or unsaponifiable matter and rosin, when present. The "titer" test affords valuable information as to the origin of the oil from which the soap was made and the regularity of different lots of deliveries.

(*Continued on page* 541.)



FACTORIES AND WAREHOUSES

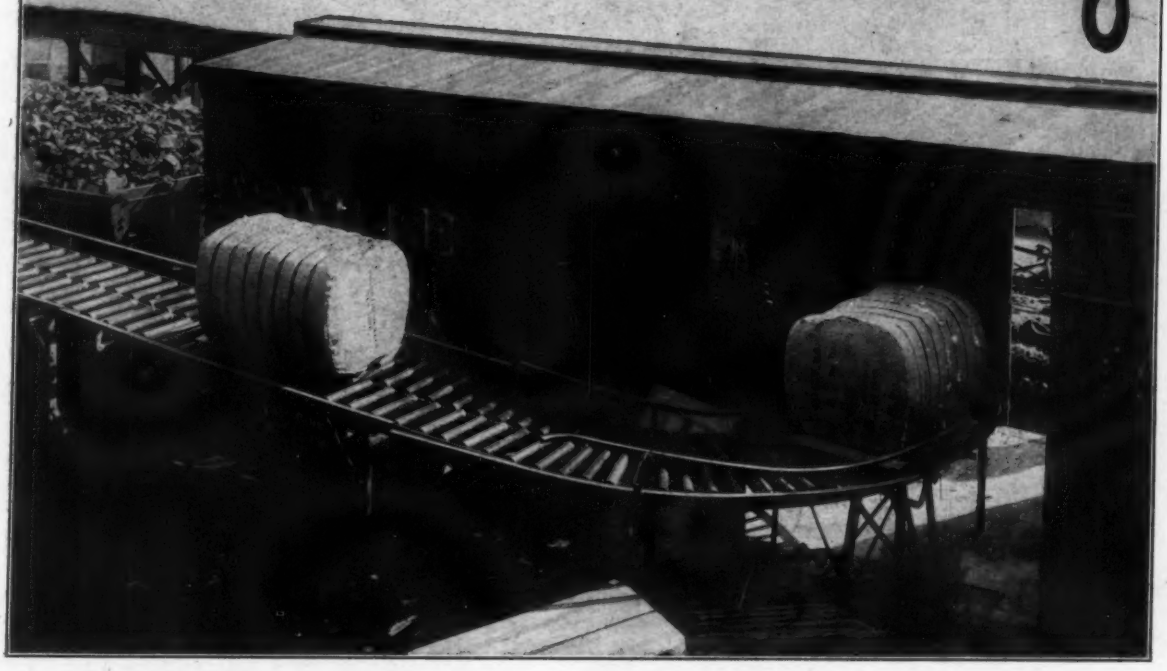
RE-INFORCED CONCRETE CONSTRUCTION

ARTHUR TUFTS COMPANY

CONTRACTORS AND ENGINEERS

ATLANTA, GA. BALTIMORE, MD.

What the Southern Mills are doing



USING A GRAVITY ROLLER CONVEYOR TO LOAD YARN AT THE CHERRY COTTON MILLS, FLORENCE, ALA.

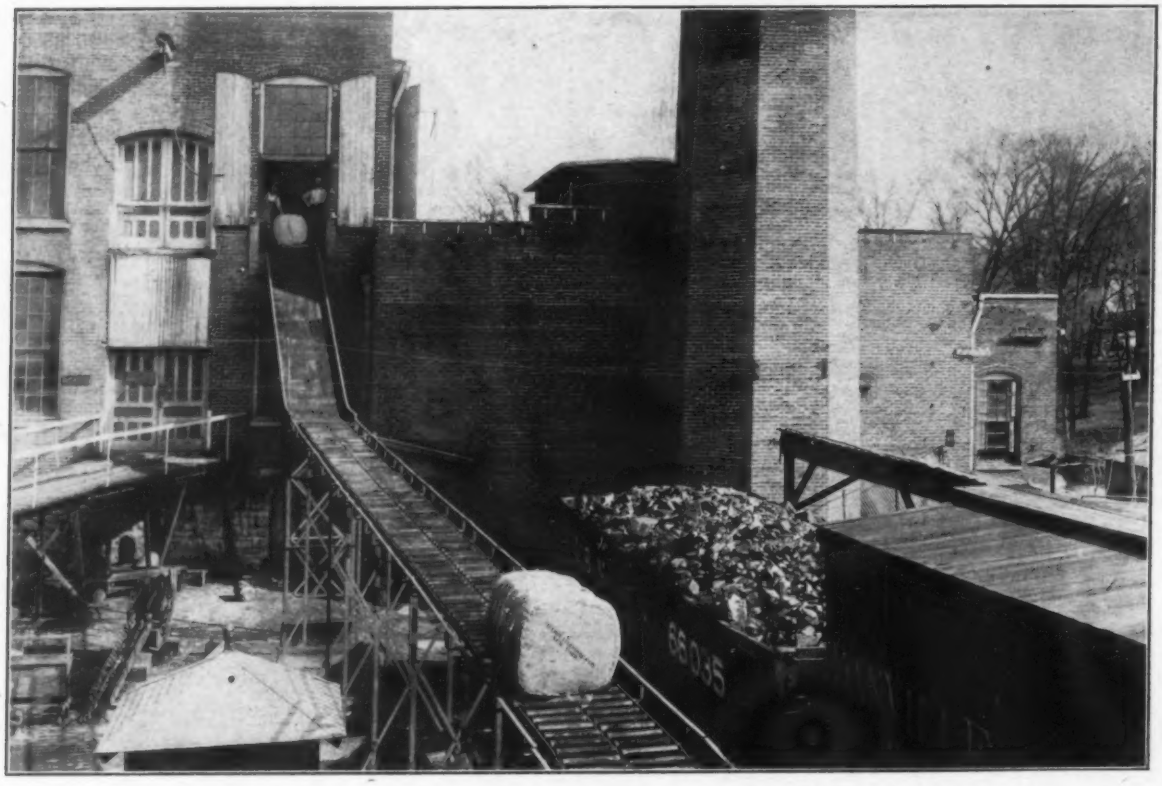
The problem of saving labor has received much attention in all manufacturing plants during the last two years. This began with the labor shortage, but the rapidly reducing variance between cost and selling price has now reached such a point that in order to keep it visible every effort on the part of the management is necessary. One of the labor saving devices being installed by cotton mills is well illustrated in the accompanying photographs which show a Mathews gravity roller merchandise conveyor at the Cherry Cotton Mills at Florence, Ala.

This conveyor, which was installed about two years ago, connects the second story of the mill, where the shipping room is located, with the loading platform and car to be loaded. The bale leaves the shipping room by dropping down an iron shute set at an angle of 45 degrees, from which it passes on to the conveyor rollers. The conveyor is adjusted to give about a four per cent grade from the lower delivery end of the chute to the point of destination.

The conveyor is supported on an iron framework from the ground for about 100 feet until it reaches the loading platform where the supports are shortened to reach the platform only and are movable. Here a right angle curve is made which turns the bale or package being conveyed in such a manner that it will enter the car to be loaded. This curve is plainly seen in one of the illustrations. There is also additional trackage to continue this 90 degree curve into a 180 degree curve which turns the bale back into the ends of the car. It is thus easily possible to unload the package at any point inside the car. After the bale is once dumped on the chute from the shipping room on the second floor, it moves by gravity and without further attention until it reaches the inside of the car, where it may be placed at any desired location.

This conveyor is said to do the work in about one-third of the time it was formerly necessary to utilize, with from one to three less men, and with a great deal less manual labor in the loading of a car of material. The packages which are handled at this plant weigh from 400 to 600 pounds each. This conveyor was installed by the Mathews Gravity Carrier Company, Ellwood City, Pa.

The Carolina Cooperative Council of the Carolina Cotton & Woolen Mills Company, Spray, N. C., held their March meeting with a very interesting and instructive program, of a more technical nature than has been the case with previous meetings. The principal speaker of the occasion was Rogers W. Davis, southern agent, Saco-Lowell Shops, Charlotte, N. C., who spoke upon the subject, "Waste in a Cotton Mill", In his talk Mr. Davis explained the meaning of capital, the dividends of capital, how waste reduces dividends, the causes and kinds of waste and the remedy for certain kinds of waste. Mr. Davis, who is chairman of the international boys' work committee of the International Association of Rotary Clubs, also spoke on the necessity of the mill securing the friendship and loyalty



ANOTHER VIEW OF THE CONVEYOR AT THE CHERRY COTTON MILLS, FLORENCE, ALA., SHOWING CHUTE FROM THE SHIPING ROOM.

of the young boys of their community, so that they may be developed into better operatives later on.

Another feature of the meeting was the presentation of charts reviewing the waste reports of the various mills of the corporation, by the chairman, L. W. Clark, who explained how the waste was distributed and number of seconds and the losses resulting therefrom. Reports were also made by the committees on suggestion boxes, savings plans and the high cost of living investigation.

The Pee Dee Manufacturing Co., Rockingham, N. C., will build an addition to its mill to be used for warehouse purposes.

An amendment has been filed to the charter of the Hudson (N. C.) Cotton Manufacturing Co., increasing the capital stock from $125,000 to $300,000.

The capital stock of the Whitnel (N. C.) Cotton Mill Company is increased from $150,000 to $300,000 by a recently filed amendment to the charter.

The Eastside Manufacturing Company, Shelby, N. C., has let contract for the erection of twenty-five new tenement houses.

The Dwight Manufacturing Co., Alabama City, Ala., is arranging to place a memorial tablet in the new postoffice building to do honor to the men who enlisted in the world war from Alabama City.

The Woodstock Cotton Mills, Anniston, Ala., plan an additional capitalization by issuing bonds to the amount of $200,000.

The Savona Manufacturing Co., Charlotte, N. C., has let a contract for the erection of a steam power plant to cost about $20,000.

The Duncan Mills, Greenville, S. C., have recently installed a new dyeing system so that their yarn may be dyed in the wound form.

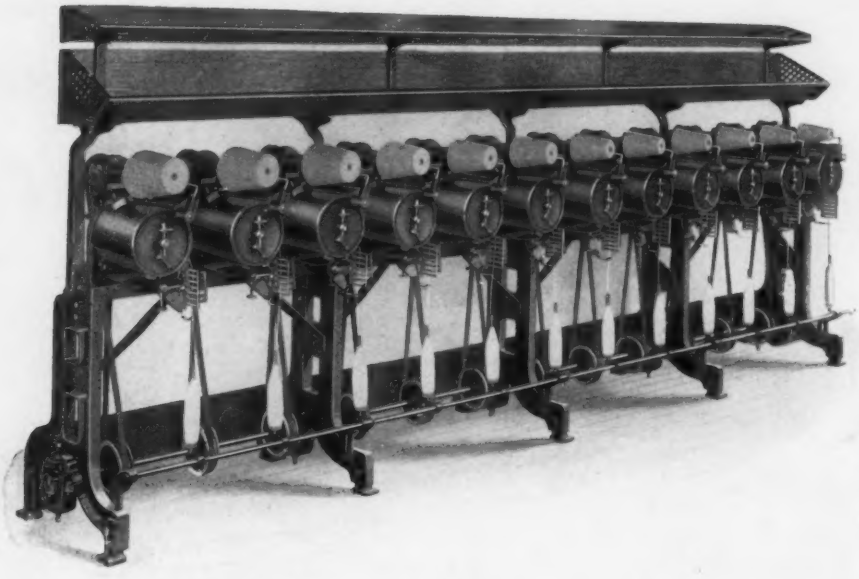
The Gibson Manufacturing Co., Concord, N. C., have installed a dyeing outfit to replace an old model in use. This was purchased from the Franklin Process Co., Providence, R. I.

It is reported that plans are under way at Andalusia, Ala., for the erection of a cotton mill at that point to represent an investment of about $1,000,000.

The International Fiber Co., El Paso, Texas, has leased temporary quarters for a plant to manufacture rope, twine, etc. It is understood that a mill will be built later. This organization was recently capitalized at $500,000. W. J. Rand is president.

Couch Cotton Mills, Inc., East Point, Ga., have recently completed a handsome addition to their plant at that place, which covers nearly three acres of floor space, with all hardwood floors. The building is of steel and concrete construction, and in it has been incorporated almost every modern convenience for the safety and health of the workers. A most modern ventilating equipment has been installed, insuring a steady flow of fresh air throughout the building. A refrigerating plant has been included in the equipment, which supplies fresh drinking water of the right temperature at all times. Another modern feature is the high speed electrically operated elevators which have been placed in the new building. There is also a rest room, with first aid equipment, where a trained nurse is on duty all during the day, a handsomely equipped cafeteria for the use of the operatives, and individual steel lockers for

A NEW FOSTER MACHINE



The Model Forty Precise Wind Cone and Tube Winder.

Suitable for all warps and plied yarns, wrapping twines and small cordage, requiring precise wound packages. Any length of traverse, any wind or lay of yarn.

Has especially designed parts for winding tubes for package dyeing.

High Speed. Self-Lubrication. Quick Threading.

THE USUAL STURDY FOSTER CONSTRUCTION.

FOSTER MACHINE COMPANY

WESTFIELD, MASS.

John Hill, Southern Representative, Healey Building, Atlanta, Ga.

WHERE WASTE

OUR business is that of buying the entire production of waste products of cotton mills, shipping them to our extensive plants at LaGrange for reclamation, cleaning, sorting, and reselling for various purposes.

From a small beginning six years ago, The Valley Waste Mills has on merit won a leading place in the industry. This has come about partly because we have not hesitated to make the large plant investment necessary for the most thorough and economical handling of all grades, and which enables us to offer to cotton mills the great convenience of selling their entire production of waste to one buyer.

VALLEY WA

CASON J. CALLAWAY
DIRECTOR SALES & PURCHASES

IS NOT WASTED

THE accompanying photographs will convey a partial idea of our plant facilities, of how thoroughly we have prepared to serve you.

But our most valuable asset is the good will of the ever increasing number of mill executives whom we are serving, who give us the preference because of our untiring efforts to serve, because they have come to know that here are combined both the resources and the voluntary will to carry out contracts regardless of market turns, and because generally we are striving at all times to improve our service.

ASTE MILLS

LA GRANGE, GEORGIA

HUNTER

MANUFACTURING AND COMMISSION COMPANY

58-60 WORTH STREET
NEW YORK CITY, U.S.A.

WORLD-WIDE DISTRIBUTOR OF
COTTON FABRICS

AN Organization of world-wide scope which keeps in close touch with every nation; studying Cotton Fabric Needs from Canada to South America, in the East and in the West, and filling their needs with intelligence and dispatch.

Also
Cotton Fabrics
for Home and for Export

Write the office nearest you.

DOMESTIC BRANCH OFFICES.

Boston	Chicago	San Francisco
Philadelphia	Cleveland	St. Louis
Baltimore	Kansas City	Greensboro

FOREIGN BRANCH OFFICES.

Buenos Aires, Argentine	Curacao, D. W. I	Caracas, Venezuela.
San Juan, Porto Rico	Santiago, Chili.	Barranquilla, Columbia.
	Havana, Cuba.	

the use of the employees. In addition, a beautiful recreation park has been laid off, surrounding the building, and will be maintained for the employees. Arthur Tafts Company, Atlanta, Ga., contractors and engineers, were the contractors who handled the construction of this addition.

Icard Cordage Company, Inc., Icard, N. C., has been organized for the purpose of textile manufacturing. Its authorized capital is $250,000. R. P. Cloud and J. Q. Van Horn, of Connelly Springs, N. C., M. C. Bernard, of Icard, and others are the promoters.

Operations in the new mill being completed at Opp, Ala., are expected to start by May 15. Sheetings and osnaburgs will be manufactured, with an equipment of 5,000 spindles and 160 looms.

The new three-story building being erected at the Sapona Cotton Mills, Cedar Falls, N. C., will house 4,000 spindles for the manufacture of yarns.

The Dallas Manufacturing Co., Huntsville, Ala., operating two large cotton mills, is establishing waterworks throughout the village of their mills, and is also erecting a large tank which will furnish sufficient pressure for fire fighting as well as for domestic use. Water is obtained from several deep wells which have been drilled on the property of the corporation.

Announcement has been made of the issuance of the first preliminary permit for the development of hydro-electric power in North Carolina. The permit was issued to the United Mills Company, Hickory, N. C., and gives that company the right to construct dams, power houses and transmission lines to generate approximately 1,000 horsepower to be used for running a cotton mill and public utility at Mortimer, N. C.

Since the creation of the federal power commission by Congress last fall the right to develop commercial water powers in the states which do not have a power commission must be obtained from the national commission, the federal commission regulates all hydro-electric developments in North Carolina.

Development of the Harper creek project will not take place until next year, according to officials of the United Mills. At present the mill at Mortimer will use power developed by steam.

The mill is practically completed now with much of the machinery installed. At present a big storage house, or warehouse, is being built just north of the mill.

The State of Alabama has acquired from the City of Montgomery a part of the site of Camp Sheridan and will develop it industrially. The development program includes the erection of a cotton mill. C. B. Rogers, chairman of the State Board of Control and Economy, Montgomery, Ala., will have charge of the erection of the cotton mill.

The Riverside and Dan River Cotton Mills Company, Danville, Va., will soon have 100 new houses completed. There are different designs included in this number, and all houses are equipped with lights, bath and furnace.

The Carolina Cotton & Woolen Mills Company, of Spray, N. C., have perfected plans for the erection of a new two-story store building at their plant at Fieldale, Va., to cost about $15,000.

A stock deal was consummated recently when the Jackson brothers, of the Jackson Brothers Lumber Company and the Tallapoosa Mills, Tallapoosa, Ga., became the owners of a large block of the common stock of Couch Cotton Mills, Inc., Atlanta.

According to information obtained from officials of the Hughes Special Well Drilling Company, eastern interests are planning to establish a large bleachery near Griffin, Ga. The Hughes Company has been drilling a well for the Kincaid Manufacturing Co., Griffin, Ga.

The New England Mill Situation.

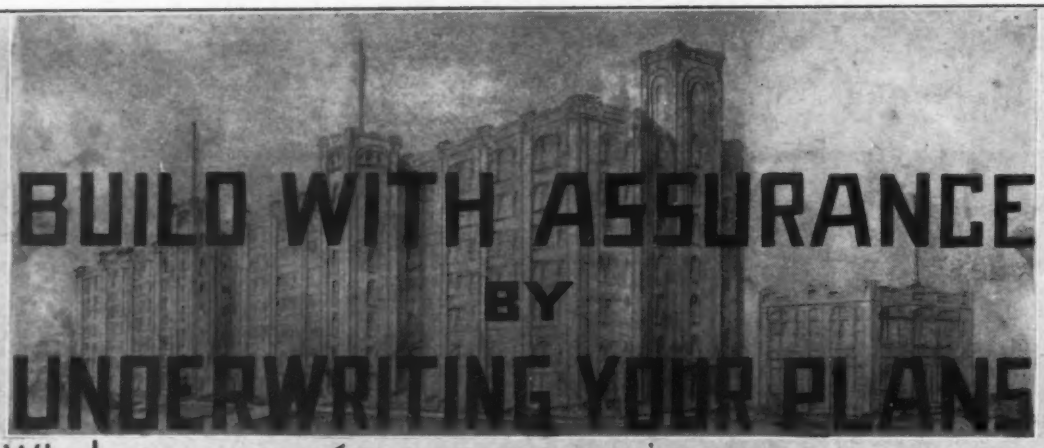
The increased production in the cotton mills noted in January and February is not being maintained. At Fall River about one-third of the machinery is inoperative, while hardly 50 per cent of the equipment at New Bedford is engaged. The mills that make the better known lines of wide sheetings, pillow tubings, ginghams, bleached muslins, etc., sold under brands, are busy. The three or four large corporations engaged in printing percales, shirtings, cretonnes, and the general run of low priced prints are also busy, but the job printers and the finer finishers are not more than 60 per cent employed.

There has been some slight improvement in the demand for certain kinds of tire fabrics and tire yarns but the large plants built in the past few years for special work in connection with automobile supplies are far from being fully engaged. Some of the fine cotton yarn mills have less than 50 per cent of their machinery employed. There is also considerable idleness among minor concerns making tapes, braids, and miscellaneous products of many sorts. The knitters are about 60 per cent employed, as a whole. The irregularity in employment among different plants is explained largely by the character of goods made, and by the policy that has been adopted in their sale.

Wherever large corporations, such as the Amoskeag Company, have named very low prices on their goods with the intention in view of selling the whole product over a period of months, the jobbers and cutters of the country have responded and placed orders large enough to insure steady running. This is the explanation of the activity in such concerns as the Pacific, American Printing Co., North Adams, and some others. The gray goods and sheeting mills, catering to a market in which competition has driven prices below costs, have had to elect between piling up goods or selling them without profit.

Some of the bleacheries have secured a very satisfactory business that will carry them through April and part of May but others are not doing better than 60 per cent capacity. The machinery builders have recently begun to feel the effects of the general contraction of business. The concerns that have large guaranteed orders in hand are making no concerted effort to fill them and wherever it is proving impossible to readjust labor cost amicably, operations are quietly being curtailed. There are some concerns that are so well engaged that they cannot undertake spot deliveries, but it has been found that loom manufacturers who would take no business for the first half of 1921, as recent as last January, are now ready to supply small lots within two months.

The explanation of the changed trade aspect is found in the lack of demand at a price mills can afford to accept. Southern cotton mills have been able, as a rule, to make a quicker and greater readjustment of labor costs than New England mills, especially those in the larger cen-



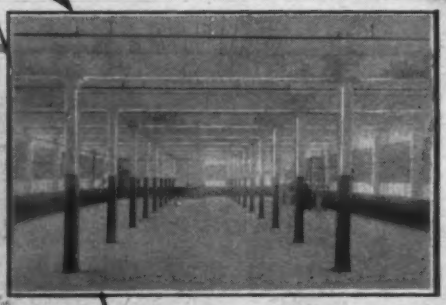
BUILD WITH ASSURANCE
BY
UNDERWRITING YOUR PLANS

What Hearne System (ARCHITECTS ENGINEERS) Means

First estimate is final cost.
No payments asked, or extras given Contractor, for our errors or ommissions.
Low costs consistent with safety of Design.
Completion on schedule.
We will bond these results.

THIS BUILDING COST 11 CENTS CUBIC FOOT

BUILT IN - 79 - WORKING DAYS IN WINTER of 1920



SOME OF THE UNIT PRICES WE HAD TO PAY

Carpenters $7.00 to $8.00 for 8 Hours.
Laborers $4.50 to $5.00 " " "
Brick Masons $7.50 to $8.00 " " "
Brick Mason Helpers $5.00 to $5.50 " " "
Maple Flooring $66.00 per 1000 feet B.M.
Timbers $100.00 " " " " "
Floor Planking $75.00 " " " " "
Roof " $60.00 " " " "
Common Brick $20.00 per 1000.
Roofing 15¢ per square foot.
Steel sash and Glazing 60¢ per sq. foot.

Hearne System
ARCHITECTS & ENGINEERS
SPRINGFIELD, MASS.

ters of mill population. Some of them making print cloth yarn fabrics or sheetings can operate at lower costs than New England mills today and they have been able to force competition to a price basis that is wholly unprofitable on many standard cloths.

The next Fall River wage period begins in June and before that time efforts will be made to bring about a further revision downward. Until there is more business in sight manufacturers are disposed to put wage talk aside and to curtail the output as orders expire. The unwillingness to pile up stock is prompted in part by the fact that workers are able to care for themselves much better now than they were last winter, and with money rates so very high and bank accommodations restricted, there is no inducement to accumulate in anticipation of better things in the near future. As a matter of fact, New England manufacturers are not looking for any real broad improvement for some time to come.

A great many problems not originating within the cotton industry but having a direct bearing upon it, are being solved, and whatever assistance is possible is being given. The manufacturers' associations are working to have freight rates reduced, both on cotton and cloths, and they are striving to do something to break the back of the coal octopus that is strangling New England, as well as many of the less favored centers of industry. Committees of manufacturers are also at work trying to bring about an agreement within the industry on new tariff plans so that an unbroken front may be presented to congressional committees from time to time as tariff matters are taken up.

In banking and trade financial circles, more serious attention is being given to the problems arising out of disturbed import and export trade. It is felt by New England cotton manufacturers that the export business in cotton goods is most desirable and should not be mishandled when the time arrives to consider tariff revision for the long future.

A common opinion that is held by some of the older manufacturers in this section is that real improvement cannot start until there has been at home, a complete revision of labor costs in steel making, railroading, shipping, and building. It is pointed out that the cotton and other textile workers, and the farmers, whether growing cotton or wheat, and the large wholesale merchants handling dry goods, have taken their losses and have readjusted their business to new conditions. But until some firm action has been taken to reduce the costs of doing business, or investing in business, such as must inevitably come through proper readjustments in the general industries referred to, it is not believed by these experienced New England manufacturers that anything like fair or profitable business conditions can be expected for cotton or other textile mills. This does not mean that they expect to see business prostrate for months.

But they contend that the longer a full readjustment is delayed, the longer the farmer and the mill owner and worker will suffer. The farmer can certainly expect little improvement until harvest time, unless it comes in the way of an encouraged money outlook which will follow steadier work than is now being seen in the great industries of the country. And they go further and say that the textile manufacturer cannot sell to the farmer, who is his best customer in the run of the years, unless something is done soon to relieve the unparalleled strain to which farmers are being subjected. In this view, cotton manufacturers are not thinking of their selfish interests in cotton alone, but they are looking beyond cotton to those who grow the things that enter into the essence of living costs on which wages are based.

The last government report on the size of the cotton crop emphasized the uncertainties that have existed for months in connection with the price of the staple. That manufacturers have been doing a full share in trying to absorb some part of the distress offerings of cotton was shown last week in a report of cotton actually delivered from the current crop to Fall River mills. For the eight months ending in March, the deliveries to local mills in Fall River reached 213,593 bales, compared with 242,245 bales in the corresponding period of 1919-20. It is worthy of note that a difference of hardly ten per cent is shown in the actual receipts of cotton bought, and this is the more surprising when it is remembered that for several months beginning in July of last year, Fall River mills were idle, to the extent of half their capacity.

It is known that New England has actually bought a larger share of cotton thus far from the current crop than has been warranted by the actual orders for cloths in hand, or by the general prospects of business for the immediate future. But cotton has appeared cheap and it is cheap for the mill that has a reserve it can spare at this time.

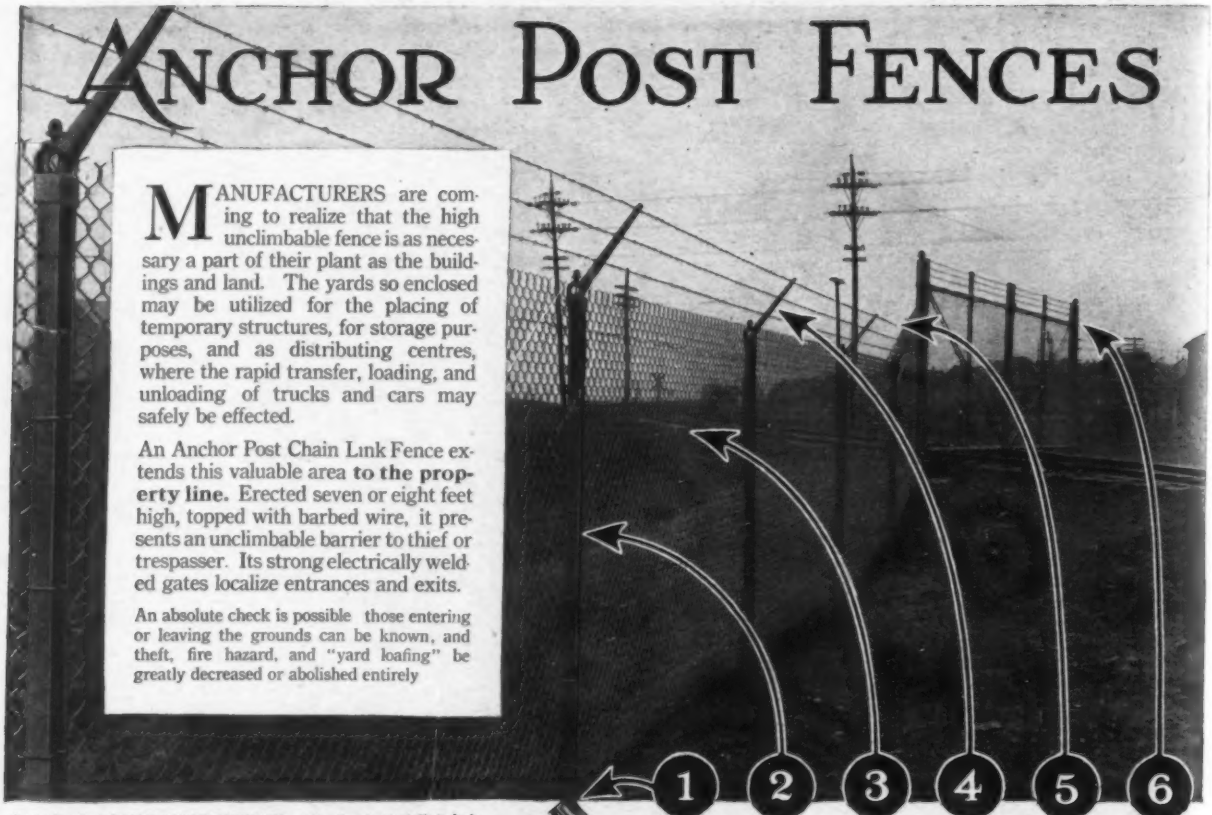
Some weeks ago when concerns like the Amoskeag and others were announcing radical reductions in the prices of the staple cotton goods they make, they were blamed by merchants in different parts of the country and by some of their competitors. But it has since been shown that the policy of making a price below cost, and letting the general public know about it, did more to stabilize cloth markets and induce the placing of forward business than anything done since last May. It also served, indirectly, to give cotton holders an added reason for not sacrificing anything they could afford to carry.

The policy worked so well in ginghams, chambrays, and on worsted dress goods, that it was adopted when prices were named last month on napped cottons for the Fall 1921 season. The reduction in price from a year ago was 66 per cent, measuring the full decline in cotton goods over that period. For a time the trade was stunned but within three weeks the whole Fall output of the big company was under order, and overordered in the case of narrow goods.

The declines that have occurred in print cloths and sheetings have been felt keenly. But there are so many other outlets for the New England industry, that an opinion prevails that within a month the minimum policy of production will be found effective in steadying the jobbers and retailers, and preparing them to take hold moderately for Fall when the normal price revisions on cotton domestics are to be announced next month or early in June.

One of the great stumbling blocks to the development of business in New England has been the slow revision of prices for finishing in job plants. Chemical costs have declined, but coal and labor still hold unconscionably high, and, until they have broken, the converter, who is such a large factor in the unfinished goods lines, will not pluck up courage to order very far ahead.

ANCHOR POST FENCES

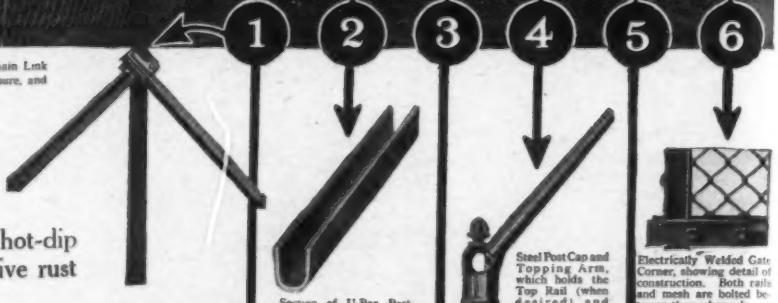


MANUFACTURERS are coming to realize that the high unclimbable fence is as necessary a part of their plant as the buildings and land. The yards so enclosed may be utilized for the placing of temporary structures, for storage purposes, and as distributing centres, where the rapid transfer, loading, and unloading of trucks and cars may safely be effected.

An Anchor Post Chain Link Fence extends this valuable area **to the property line.** Erected seven or eight feet high, topped with barbed wire, it presents an unclimbable barrier to thief or trespasser. Its strong electrically welded gates localize entrances and exits.

An absolute check is possible those entering or leaving the grounds can be known, and theft, fire hazard, and "yard loafing" be greatly decreased or abolished entirely

An Anchor Post DREADNAUGHT STOCKADE. A heavily galvanized Chain Link Factory Fence, eight feet high. This picture was taken from within the enclosure, and shows the "back" of the fence.



Section of U-Bar Post, showing that there is no "inside" for the collection of moisture

Steel Post Cap and Topping Arm, which holds the Top Rail (when desired) and barbed wire. Cannot be bent or broken.

Electrically Welded Gate Corner, showing detail of construction. Both rails and mesh are bolted between these channels.

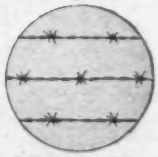
EVERY part of an Anchor Post Chain Link Factory Fence or Gate, whether exposed or unexposed, is heavily galvanized by the hot-dip spelter process. This is the most effective rust preventive known.

Erecting service by our own trained crews, or full cooperation with your workmen, insure these results *promptly.*

We call your attention to these *6 points of advantage.* They mean fence reliability—Anchor Post Fences.

Perfect alignment for years to come. This anchorage cannot be uprooted or loosened; frost and thaw will not affect it.

Heavy Chain Link mesh, which always remains taut; springy, it will not bulge. Heavily galvanized.



Galvanized Barbed Wire, strong and formidable which effectually warns away the most daring fence climber.

ANCHOR POST IRON WORKS

50 CHURCH ST., NEW YORK, N. Y.

Prior to May 1st, 167 Broadway

BRANCHES

Boston:	79 Milk Street	**Chicago,**	8 So. Dearborn Street
Hartford:	902 Main Street	**Cleveland:**	Guardian Building
Philadelphia:	Real Estate Trust Building	**Pittsburg:**	Jenkins Arcade
Richmond:	119 Mutual Building	**Rochester:**	1006 Main Street, East
		Mineola, L. I.:	Jericho Turnpike

2333-G

Anchor Post Fences

Cotton Comment.

BY H. AND B. BEER.

New Orleans, April 7, 1921.

While financial conditions have improved in Europe and America, and although the foreign political situation appears better, the market shows little change compared with one month ago because of British labor troubles. The threatened British coal strike has become a reality, and there is the possibility of the strike spreading to other divisions of trade, as British transport workers and railway men threaten to strike in sympathy with the miners. In event of a general strike in the British Isles, many people, in addition to the millions of miners, transport workers and railmen, would be thrown out of employment, as mills and factories would probably have to close for want of fuel and transportation facilities.

However, if the British labor troubles are settled, the market is in a position to respond quickly to such favorable news, as Manchester advices continue to show improvement, money is easier, mill stocks, in Europe and America, are light, and there is the assurance of a substantial decrease in the cotton acreage in the South this year.

Returns to the Watkins Bureau indicate an average decrease in the acreage of 25 per cent, while sales of fertilizer show decreases ranging from 40 to 75 per cent compared with one year ago.

The returns of the National Ginners' Association point to an average decrease in the acreage of 29 per cent, while sales of fertilizers by manufacturers show a decrease compared with last year of 48 per cent; by dealers a decrease of 41 per cent.

Official reports to the New Orleans Cotton Exchange denote a relative increase in sales of fertilizers during the month of March, as will be seen by the following tonnage comparatives. Nevertheless, the total sales for eight months represents a decrease compared with last season of 49.58 per cent. North Carolina does not report in tons, but gives a decrease of 52 per cent compared with last year.

	This Season Tons	Last Season Tons
Total sales to close of Feb.....	653,000	1,855,000
Sales during March	698,000	825,000
Total for 8 months 1,351,000		2,680,000

To the close of March the South marketed only 8,383,000 bales vs. 10,891,000 to corresponding date last season, while exports to foreign countries for the same period totaled only 3,744,000 bales vs. 5,118,000. Spinners takings of American cotton to April 1st were only 6,977,000 bales against 9,719,000 to even date last season.

According to the Census Bureau returns the South ginned 13,198,000 bales compared with 11,326,000 last season, linters not included. On the basis of a crop, including linters, of 13,800,000 bales vs. 11,936,000 last season, the South, at the close of March, had nearly 4,000,000 bales more to market than was on hand on the corresponding date one year ago—7,803,000 bales vs. 3,925,000.

It is unfortunate for the South that British labor troubles should appear so serious at this time, especially when the market seemed to be on the road to recovery and it is to be hoped that the labor troubles abroad will soon be at an end.

In event of the English labor troubles being settled soon, the market will likely work higher, perhaps much higher eventually, as there is every reason to anticipate an expansion in international and domestic trade, and Washington is optimistic as to the future, predicting higher prices for cotton ultimately.

The trade is now approaching a period when business commenced to decline last year, whereas from now on it is likely to improve, and because of the low prices now prevailing for all commodities, there is more confidence and stability in the markets than there was at this time one year ago.

Under the circumstances we believe the time is opportune for spinners to provide for their future requirements, and not take the chances of the market advancing later in the year.

Cotton Facts.

The latest edition of "Cotton Facts," known throughout the industry for its usefulness, comprehensiveness and fidelity, has just been issued by the publishers, the Shepperson Publishing Company, Cotton Exchange Building, New York City. It contains 160 pages of condensed statistical information covering the various commercial activities of the cotton trade. Its widespread scope is shown by its diversified range of topics, which include cotton culture, embracing acreage, yield, condition and preservation; cotton marketing, showing the record of the world's exports and imports; receipts and shipments, price quotations and values; transportation, wage and dividend data; and complete information concerning the most useful phases of the manufactured output. This year's new features embrace maps in color, enlarged reviews and extended tables.

At no time since Col. Shepperson's death, it is stated, has the Shepperson Publishing Company been in such an advantageous position in regard to cotton statistics. It is directed and controlled by C. W. Shepperson-Bull, the only surviving member of the family connected with the business. The company has already taken steps to extend its lines of communication to new and enlarged sources of information and fields of usefulness, and the next edition of "Cotton Facts" should eclipse any other edition in precision, promptness and proficiency. This company also publishes "Cotton Codes." The season has just begun and many firms just starting up, and many already established and who are extending their business should remember the saving they can accomplish in installing or extending their installment of a code system in their business. In this connection it should be remembered that the cotton cipher code (edition of 1878) is designed for domestic use, while the standard cotton code (edition of 1881 and 1915) are intended for both foreign and domestic use. Also, this company has issued a folder containing a list of its other publications which they will mail upon request.

"Textile Mathematics—Part 2," by T. Woodhouse and A. Brand, has been issued. This is the second part of a series of two volumes on this subject by these authors, and deals with ratio, proportion and variation, averages, percentages, loss and regain, logarithms, yarn counts, etc. It is published by Blackie and Son, Ltd., London, and sets of the two volumes are now procurable.

Notes About Men You Know.

J. C. WATERS, formerly connected with the Saluda Yarn Mills, Greenville, S. C., has succeeded C. E. O'Pry as superintendent at the Jonesboro (Tenn.) Cotton Yarn Mills.

E. T. WHITIN has been made overseer of spinning at the Hampton (Ga.) Cotton Mills.

B. W. BINGHAM has resigned as manager of the Ozark (Ala.) Cotton Mills, the Rainbow Manufacturing Co., Ozark, Ala., the Pinckard (Ala.) Cotton Mills and the Madrid (Ala.) Cotton Mills, effective March 15.

W. M. MILLER, who until recently has been superintendent of weaving at the Miller Cotton Mills, Waco, Texas, has accepted the general superintendency of the Stonewall (Miss.) Cotton Mills.

T. P. EPLEY has resigned as overseer of weaving at the Mecklenburg Manufacturing Co., Charlotte, N. C., to accept a similar position with the Fulton Bag & Cotton Mills, Atlanta, Ga.

H. L. DEARMON, formerly of Salisbury, N. C., has become superintendent of the Greenville (N. C.) Cotton Mills.

J. W. MCALPINE has resigned as overseer of twisting at the Atherton Mills, Charlotte, N. C.

J. C. PRICE has resigned as overseer of weaving, slashing and cloth room at the Beaver Cotton Mills, Thomson, Ga.

L. G. COPSHAW, who recently resigned as overseer of spinning, twisting and warping at the Paola Cotton Mills, Statesville, N. C., has accepted the position of overseer of carding and spinning at the Jackson Mills, Monroe, N. C.

W. B. CASH has accepted the position of overseer of weaving at the Gambrill-Melville Mill, Bessemer City, N. C.

M. D. HANEY has resigned as superintendent of the Rex Spinning Co., Ranlo, N. C.

W. S. Gray has been elected president of the Spartanburg County Mills, Spartanburg, S. C., succeeding John B. Cannon, who recently resigned. Mr. Gray is also president of the W. S. Gray Cotton Mills, Woodruff, S. C.

LOUIS SWINK, of Woodruff, S. C., is now secretary of the Spartanburg County Mills, Spartanburg, S. C., succeeding Fred Bearden.

J. J. DUNCAN has been made superintendent of the new Acme Spinning Company, Belmont, N. C. W. B. Duncan is overseer of spinning and John Thrower is overseer of carding.

A. M. BATES has resigned as overseer of the cloth room at the Montgomery (Ala.) Cotton Mills.

C. W. CAUSEY, of Greensboro, N. C., who is president of the Lowe Manufacturing Co., Huntsville, Ala., was also elected treasurer of the corporation recently.

J. W. HARRIS, High Point, N. C., who was one of the owners of the Covington-Harris Mills, died recently after a short illness from pneumonia. He was 54 years of age.

WALTER S. TAYLOR, well known cotton manufacturer, died at his home in Hickory, N. C., on March 14, at the age of 58 years, following a stroke of paralysis. Mr. Taylor was manager of the Rhodhiss (N. C.) Mills Company from 1905 until about a year prior to his death.

J. H. BURGESS was recently appointed overseer of weaving at the Simpsonville (S. C.) Cotton Mills.

WILLIAM E. PECK, agent of the Baltic Mills Co., Baltic, Conn., died recently. He was 64 years old, and had been with the Baltic Mills for the past 20 years, since they were started. He had been ill for ove r a year.

J. L. ALLEN has been made overseer of spinning at the Harmony Grove Mills, Commerce, Ga. He was formerly second hand in spinning.

S. B. ALEXANDER, JR., of Alexander & Garsed, Charlotte, N. C., was recently elected a member of the board of directors of the Crompton & Knowles Loom Works, Worcester, Mass., for whom the Charlotte concern are the southern representatives.

J. L. GRANT has resigned as overseer of the cloth room at Roanoke Mill No. 2, Roanoke Rapids, N. C. He has accepted a position with the Chadwick-Hoskins Mills, Charlotte, N. C.

B. L. COX has accepted the position of overseer of weaving at the Altamahaw (N. C.) Cotton Mills.

LUKE SEAWELL, manufacturers' representative, 422 Austell Bldg., Atlanta, Ga., handles a varied line of hardware and building specialties, etc. He represents the Coburn Trolley Track Mfg. Co., Holyoke, Mass., who manufacture Kalamein and Tinelad fire doors and fixtures; the Dahlstrom Metallic Door Co., Jamestown, N. Y., makers of hollow metal, steel and bronze doors; the Kerchen Company, who make "K-S-V" and "Arex" ventilators, suitable for industrial plants; and the Grant Pulley & Hardware Co., overhead pulleys, etc. Among the other lines handled by Mr. Seawell are steel sash and Pond continuous sash and operating device, made by David Lupton Sons Co.; ball bearing door hangers, locks, elevators, door controllers, etc. of the Reliance Grant Elevator Equipment Corp.; ornamental terra cotta manufactured by the South Amboy Terra Cotta Co.; and Tuec stationary vacuum cleaners, made by the United Electric Co., of Canton, Ohio. He handles also the "Alolite" lamps of the Associated Lamp Co., built especially for rough, industrial use.

ALBERT L. SCOTT, vice-president of Lockwood, Greene & Co., Boston, Mass., accompanied by his wife and daughter, sailed for Europe on April 20 on the S. S. Olympia. He plans to visit France and England, combining pleasure and business, and will return to the States about July 1. Mr. Scott is on the program of the World Cotton Conference for an address at the ninth session of the Conference in Manchester on June 21, and his subject will be "Needed Reforms in Compressing, Ginning and Baling".

LEE PACKARD has resigned as general superintendent of the Cliffside Mills at Cliffside and Avondale, N. C., to become superintendent of the new Eastside Mill, Shelby, N. C. Mr. Packard was in his former connection for 14 years.

MAURICE HENDRICK, who has been assistant superintendent of the Cliffside Mills, at Avondale, N. C., becomes general superintendent of the two mills of the company, succeeding Lee Packard. Mr. Hendrick, who is a graduate of the N. C. A. & E. College, started in at the Cliffside Mills 11 years ago oiling machinery, and now becomes general superintendent of one of the largest gingham mills in the South.

Time was when you liked to take a chance on a lucky packet, but you do not use that method in business.

Warren Soap and Warren Service combine the accumulated experience of a large part of the textile trade during fifty years with the most up-to-date scientific investigation.

The Warren Soap Manufacturing Co.
77 Summer Street, BOSTON, MASS.
Established 1870 **Incorporated 1890**

STRAIGHT LINE METHODS

Balanced Business

No sales department, however well organized, can operate successfully with indifferent buying and producing facilities. Production, on the other hand, however efficient, becomes overproduction, if not balanced by capable selling. Balance between departments must back up co-operation if waste, unnecessary overhead, shut-downs, are to be avoided.

Balanced Business, which means Better Business, is almost wholly dependent on sound Accounting Methods. Timely and dependable Facts and Figures from every department are the balance wheels —the executive's surest guides. All intelligent progress, broader missions, co-ordinated strength, larger profits—depend upon them.

And that Facts and Figures may more quickly and clearly tell the executive their vital story—Graphic Charts, the moving pictures of your business.

ERNST & ERNST

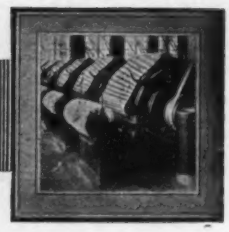
AUDITS - SYSTEMS
TAX SERVICE

NEW YORK	CHICAGO	CLEVELAND	CINCINNATI	NEW ORLEAN
PHILADELPHIA	MINNEAPOLIS	BUFFALO	INDIANAPOLIS	DALLAS
BOSTON	ST. PAUL	PITTSBURGH	TOLEDO	FORT WORTH
PROVIDENCE	ST. LOUIS	DETROIT	ATLANTA	HOUSTON
WASHINGTON	KANSAS CITY		RICHMOND	DENVER

STRAIGHT LINE METHODS

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects



Some Questions on Carding.

EDITOR COTTON:

I would like to ask through the columns of your magazine, what would be a good setting on a card making a 65 grain sliver with a 14-ounce lap, with stock 1 inch long?

I would also like to have explained why a stripping plate set further from the cylinder gives more strip than one set closer?

Another question I would like to have discussed is why do some carders set the top mote knife closer than the bottom one, while others set the opposite way?

J. S. B. (Mass.)

Lowering Speeds to Increase Production.

EDITOR COTTON:

I read in the February number of COTTON in the article entitled "Lowering Speeds to Increase Production" on page 257. "It will be found that with a lower flyer speed a much less amount of twist can be inserted with sometimes quite a corresponding increase in the front roll speed."

I would like to ask for detailed experiences of readers of COTTON with any explanations or reasons which they can advance why a lower flyer speed with the same cotton would allow a less amount of twist to be inserted?

G. C. (Vosges, France.)

EDITOR COTTON:

Replying to the correspondent from Vosges, France:

There are numbers of reasons why a lower flyer speed will allow the insertion of less twist in the roving and I will try to point out two of the reasons for this assertion.

If we consider the presser on the flyer we find that it is held against the bobbin by the centrifugal force of the heavier part of the presser tending to follow the tangent of the circle of revolution. The balance of the presser is heavier than the presser finger itself and the difference of the centrifugal force is what presses the roving against the bobbin.

We know from physics that this force is equal to the product of the weight of the moving object, the distance from the center and the angular velocity, which gives us the momentum of this revolving portion of the flyer.

Now the distance from the center or the radius of revolution and the weight are constant so the only variable which will vary the pressure will be the angular velocity of the flyer. Then the higher the flyer speed the more pressure is exerted on the roving as it passes between the presser and the bobbin. If a small amount of twist is used with a high flyer speed then the pressure will be so great on the roving that it will stretch, thus causing weak roving which will break back in the creels of the succeeding processes.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

On the other hand, the lower speed will cut down the pressure as the angular velocity is decreased and the soft twisted roving will be more uniform and consequently stronger.

If the speed is sufficiently high any slight play in the bolster will cause a vibration in the spindle and at each vibration the roving is stretched and low twist would certainly cause these ends to come down. With a lower flyer speed this vibration is very greatly eliminated and less twist will suffice, where at higher speeds more twist would be required.

James Robertson.

Studying Picker Troubles.

EDITOR COTTON:

It has occurred to me that perhaps a word about the evener motion might bring out some viewpoints of other readers concerning this ever troublesome member of picking machinery.

First of all, I personally feel that the duties of the evener motion were originally to so control the feed rolls when an operative allowed one lap to run out on the apron (possibly without being noticed) that the evener would adjust the surrounding conditions and create a speed that would make up the 25 per cent loss represented by the one lap. For this reason and none other do I think the evener was ever intended, but as we look through some of our mills we find there has crept into some of our yarn calculations or lay-outs the assumed fact that this process actually evens the picker yardage.

In the March number of COTTON the readers will find a practical letter signed by "W. H. H. (Ga.)" in which he states that during an investigation of the application of anti-friction bearings, he ran across the fact that because there was a distance of three inches between the evener roll and the feed rolls with an approximate draft of four inches, should an uneven place come under the evener roll the action of that roll would change the weight of that portion of yardage which would be 12 inches in length, and also change the weight of 12 inches more in returning to its normal position—which, after all, might have been but a slight unevenness had the evener roll been

so designed as to have allowed that tiny unevenness to pass unnoticed. In other words, any action of the evener roll has a tendency to uneven instead of to even those parts of yards.

For an experiment, I have disconnected the cones from the evener roll and have fastened the sliding bar which controls the action of the cone belt so that the belt remains in one position upon the cones. With this arrangement, together with what I called perfect yardage from my hopper on the breaker picker, I found that the yardage from the finisher picker was entirely satisfactory—all of three dozen yards tested weighed exactly the same number of ounces.

This test proved very interesting and instructive, but I also found that if this belt was held in one position on the cones there would, at times, be that excessive light yardage that was bound to occur at times when the operative neglected the laps on the apron. In order to meet all possible trouble I connected the evener and insisted that the evenness must come from the breaker hoppers as previously described. I can't possibly see how men can sit by and see their picker laps full of thick and thin places when such a small cost would guarantee a perfect, even web. With this absolutely even web passing beneath the evener roll one can readily see that this will assure the possibility of the cone belt standing in one position upon the surface of the cones. When the cone belt can be made to run in one position on the cones, and still all parts be flexible for emergencies, then is the time the yarn is certain to be of one diameter and the breaking strength certain to be as strong as the cotton. With an even yardage one can set a Kirschner beater to a position where every needle will penetrate the whole thickness of the web passing by the feed rolls, cleaning every particle—and this can be accomplished with a 700 revolution beater speed at that.

There is another point on most pickers which causes more or less unevenness that sometimes isn't noticed, and that is the tension on the aprons. On an intermediate and finisher machine where the laps are dropped from the tender's shoulder to the apron, this will cause the apron to stretch and if the apron is friction driven, there will be noticed from time to time a slight stop which pulls the web apart between the evener roll and apron. This will cause the evener roll to speed the whole outfit to overcome the thinness caused by the slipping apron. These aprons should be made positively driven if possible. By eliminating all these trouble-makers in the early stages of the game, and with a correct foundation, one can build for evenness, perfect roll settings, tensions, and in fact for everything that could be desired. A complete investigation around all the cages in all pickers should be made to determine if there are any leathers at the ends which need repairing. All these things which need repairing should be attended to as soon as possible, otherwise good cotton will escape through the ends of the cages to the dust cellar.

Still another item would be worth while investigating before leaving the yardage from pickers, and that is: If a lap could be made on the head of a picker without the frictional contact upon the fluted calender rolls, one could be assured of evenness that never could be questioned, but I have found a variation of from eight to sixteen per cent in extra length from actual measurement over and above that which the measuring roll calls for. This excessive stretch is caused by the friction shoe holding so firmly that the lap in the making is crushed against the calender rolls in its revolution, expanding the length of each yard. This also shows that if a picker is geared to give a 16-ounce lap per yard, this stretch would interfere greatly with the figured sizing. We would find ourselves actually getting a 13½-ounce yard, approximately, when there is a 16 per cent stretch. This weight is brought back to 16 ounces per yard by increasing the weight at the breaker picker, and the stretch in most every case is ignored, but it actually exists upon almost every picker made.

Atmospheric conditions have a great amount of control over this condition and if this factor could be eliminated we would find considerable change for the good in our sizing. Although this stretching process exists continuously the fact still remains that it is there and the unevenness caused by that friction must not be driven from our minds unheeded, for if we are to get at the base of all the things that interfere with even work, we must find some way to handle every evil. Because we can't change the method of building a lap, or at least no one has as yet found a method of forming one without that frictional contact, we find ourselves face to face with an attachment that in a way will have a tendency to spoil all the labors previously exerted in bringing about an even yard up as far as this member of the picker—the head.

If the atmospheric changes have such a weight in the final outcome of a good, even web, isn't it then quite the proper method to follow in placing artificial humidity under automatic control in a picker room? This would assure an even temperature and humidity, saturating (properly) the web of cotton in the first process, thereby aiding the next process to maintain its proper amount. This would also keep constant the friction upon the rack leverage in the heads of all pickers, keeping the stretch constant from one week-end to the next, and keeping the individual yard, and also the total weight of lap, constant thereby assisting greatly the production and general appearance of the whole picking outfit. As I look at the question of ounces per yard, taking into consideration the tendencies of every part of a picker to make uneven rather than even yards, one never knows exactly as to the number of ounces his yards weigh. For if he figures that with a certain weight of lap on the apron, with a draft of four inches, and he applies a certain draft gear to give a certain ounce per yard finished lap, he should know whether his evener is running constant, and he must know the exact amount of extra length to which his lap is being rolled out upon the 9-inch calender rolls. If the friction is altered by the atmospheric conditions (and we will all agree that it is) how, at any instant of the day, can we positively say that the yardage weighs so many ounces?

But this I do know: by following the suggestions previously mentioned, the general outcome of the total efforts exerted will allow any person following them to go home at night and rest contentedly the whole night long, rather than trying to place the whole mill within the four walls of his bedroom. There isn't room for it in any bedroom.

A picker room should get its supply of air for its fans from large pipes leading to the upper part of a boiler room. This system of pipes should be made so that the boiler room end is covered with fine mesh cloth to hold back the dust from the boilers, but thin enough to allow the proper amount of warmed air to be used to come

Business Meets New Conditions

American business has been clearing decks. Budgets have been revised. Every buying, selling and production unit has been overhauled and made ready for intensive service. Economy has been the test—encomy of time and effort.

In any study of functions and readjusting of methods, the work done by your bank balance should not be overlooked. Has it been merely a checking account and a basis for commercial credit? Or has it brought to the aid of your organization other constructive services? Are you making use now of all the help it should provide?

Many business men who carry deposits with the Irving or with Irving correspondents have discovered broader service possibilities in their banking connections. The Irving investigates markets as well as credits, expedites deliveries of merchandise as well as collections, supplements the information resources of its customers both in domestic and foreign fields. Every transaction it undertakes, either at home or over-seas, is handled with a clear understanding of business essentials as well as of banking requirements.

IRVING NATIONAL BANK
WOOLWORTH BUILDING, NEW YORK

1851-1921: SEVENTY YEARS A BUSINESS BANK

from that point, rather than draw the amount through the window joints, or from other departments depriving them of the artificial humidity that is so essential in yarn manufacturing. A box with a series of screens can be made to cover the boiler room end of picker room air pipes. If this can't be accomplished the next best thing is to draw cold air from out-doors through ventilators.

A. B. C. (R. I.)

Anent the Picker Evener.

EDITOR COTTON:

The point that "W. H. H." of Georgia brings out is apparently only too true and we see that we are, indeed, a long ways from perfection in the textile arts today but consider—

We shall assume that the evener rolls are run at varying speeds and that the feed rolls are run at a constant speed as suggested by "W. H. H." Now we have a thick place coming up to the evener rolls and as a consequence the evener roll is slowed down. What is the result? The feed roll continues at a constant speed and as a result the portion of the laps between the feed roll and the evener rolls is drafted and at the weakest place, which is already the thinnest, is so made thinner by this drafting. Here, I believe, the idea of "W. H. H." is defeated.

We may also assume that a thin place comes through the evener rolls and as a consequence they are speeded up. If we feed more between the evener and feed rolls than the feed rolls will take care of, then there will be a piling up of the cotton and a large wrinkle or thick place will go through to the beaters.

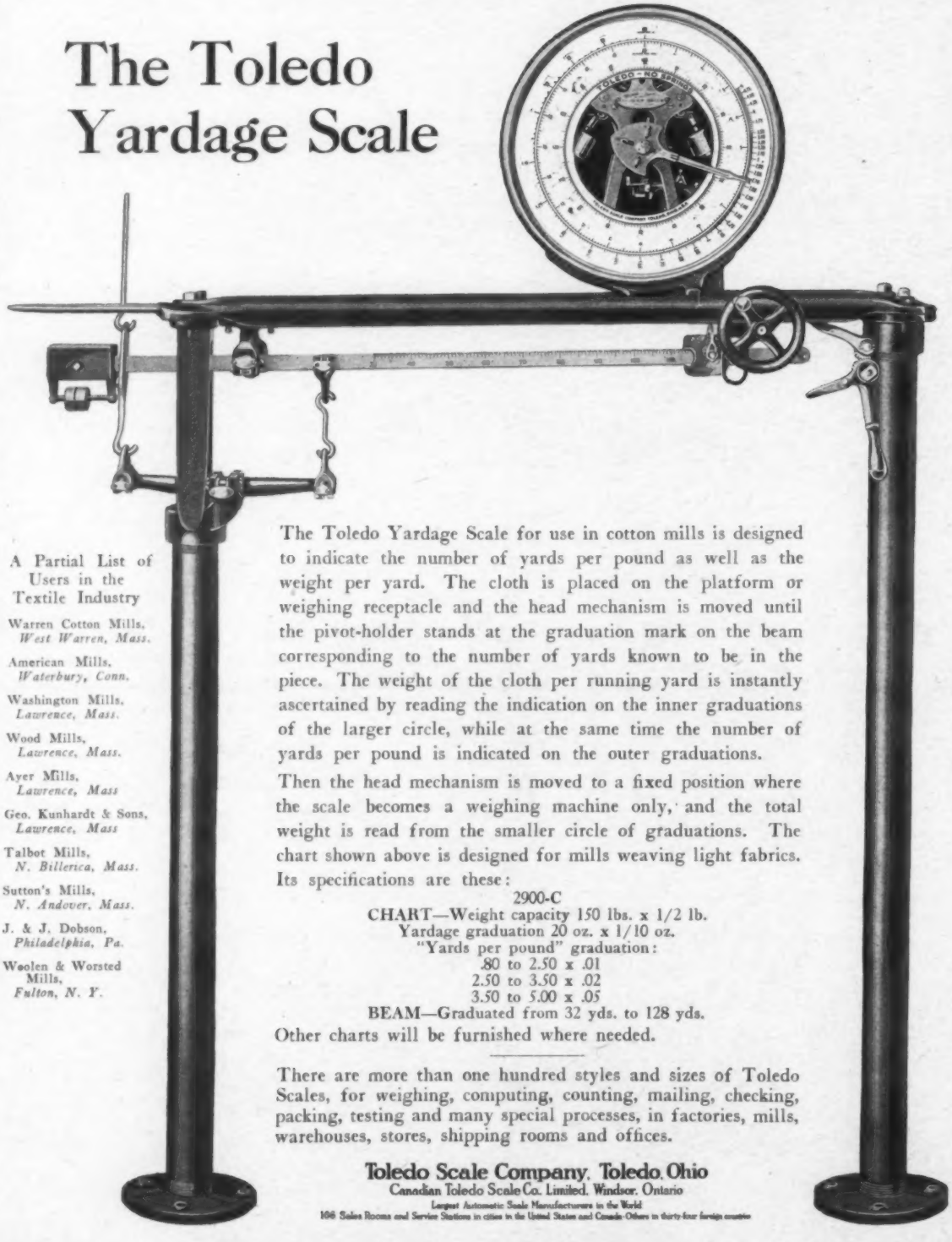
Further, if we take into consideration the fact that the part of the circumference which is exposed for condensation on the screens is far in excess of 12 inches or four times the distance between the feed roll and the evener roll we may reason as follows:

The thin place comes under the evener roll and the feed roll feeds heavy. The cotton must be distributed according to the draft on the cages and quite a bit of the cage is covered. Now, before this portion of the lap on the screens is fed entirely around and off by the stripping plate the thin place has come through and so the already thick places on the screens are still present and less cotton from the thin place is distributed along the screen which is the desired effect wanted.

Besides, doesn't it really take a little time for the cotton to be released from the feed rolls and travel around to the cages? Watching through one of the picker covers of the glass window type the writer has noticed that the cotton seems to go through quite a bit of evolution before being finally deposited on the screen which takes time to the extent of possibly a few seconds. The speed of the feed amounts to about 1½ yards per minute or more which gives 54 or 60 inches fed per minute or approximately one inch per second. Therefore it takes but three seconds for the cotton passing under the evener roll to pass under the feed rolls and away with the beaters.

"W. H. H." will agree that the chief advantage of the evener is where the laps run thick or thin for a number of

The Toledo Yardage Scale



A Partial List of Users in the Textile Industry

Warren Cotton Mills, *West Warren, Mass.*

American Mills, *Waterbury, Conn.*

Washington Mills, *Lawrence, Mass.*

Wood Mills, *Lawrence, Mass.*

Ayer Mills, *Lawrence, Mass*

Geo. Kunhardt & Sons, *Lawrence, Mass*

Talbot Mills, *N. Billerica, Mass.*

Sutton's Mills, *N. Andover, Mass.*

J. & J. Dobson, *Philadelphia, Pa.*

Woolen & Worsted Mills, *Fulton, N. Y.*

The Toledo Yardage Scale for use in cotton mills is designed to indicate the number of yards per pound as well as the weight per yard. The cloth is placed on the platform or weighing receptacle and the head mechanism is moved until the pivot-holder stands at the graduation mark on the beam corresponding to the number of yards known to be in the piece. The weight of the cloth per running yard is instantly ascertained by reading the indication on the inner graduations of the larger circle, while at the same time the number of yards per pound is indicated on the outer graduations.

Then the head mechanism is moved to a fixed position where the scale becomes a weighing machine only, and the total weight is read from the smaller circle of graduations. The chart shown above is designed for mills weaving light fabrics. Its specifications are these:

2900-C
CHART—Weight capacity 150 lbs. x 1/2 lb.
Yardage graduation 20 oz. x 1/10 oz.
"Yards per pound" graduation:
.80 to 2.50 x .01
2.50 to 3.50 x .02
3.50 to 5.00 x .05
BEAM—Graduated from 32 yds. to 128 yds.

Other charts will be furnished where needed.

There are more than one hundred styles and sizes of Toledo Scales, for weighing, computing, counting, mailing, checking, packing, testing and many special processes, in factories, mills, warehouses, stores, shipping rooms and offices.

Toledo Scale Company, Toledo, Ohio
Canadian Toledo Scale Co. Limited, Windsor, Ontario
Largest Automatic Scale Manufacturers in the World
106 Sales Rooms and Service Stations in cities in the United States and Canada-Others in thirty-four foreign countries

TOLEDO SCALES
NO SPRINGS - HONEST WEIGHT

feet where it certainly performs the duty for which it was intended.

I have also seen numbers of pickers comprising of a single feed roll and sectional rolls bearing on this, which forms a combination feed and evener equipment and all our argument for this type of machine is at naught.

W. J. R. (R. I.)

Using a Machinery Plan in Checking Production.

EDITOR COTTON:

Progressive mills usually have various methods of checking up machinery on the floor of each department in connection with the information desired. The system which gives the most satisfaction is that which has a floor plan of the department on the back of the daily report, as shown in the illustrations. Fig. 1 shows the regular daily report side in blank while Fig. 2 shows the floor plan of which the report consists.

With reference to the machinery on the floor of any department there are several important matters which concern the management in various ways, as follows: amount of machinery, kind of machinery, size of machinery, location of machinery, idle machinery, by whom operated, what style of goods on each machine, production of each machine, condition of each machine, waste made on each machine, speed of each machine, seconds made on each machine,

DAILY LOOM RECORD — Nº 2 MILL 2ND Floor — Weaving Dept.

TOTAL LOOMS

Style Number	Class of Goods	Running	Waiting for Yarn	Waiting for Repairs	Waiting for Help	Waiting for Changes	Waiting for Orders	Total	Appropriated	
TOTALS										
IDLE										

OVERSEER

FIG. 1

WEAVERS NAMES	LOOMS Nos.

Nº 2 Mill-2ND Floor Weaving Dept. ---------- 192

6-30" —— LOOMS 54-40" —— LOOMS

84-36" —— " TOTAL 144 "

Looms per Weaver 12 Total Weavers 12

" " Section 72

North 84-36" — Looms Nos. 7 to 72 - 91 to 108

6-30" — Looms Nos. 1 to 6

SECTION Nº1 72 LOOMS									SECTION Nº2 72 LOOMS									
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
71	69	67	65	63	61	59	57	55	53	51	49	47	45	43	41	39	37
72	70	68	66	64	62	60	58	56	54	52	50	48	46	44	42	40	38
73	75	77	79	81	83	85	87	89	91	93	95	97	99	101	103	105	107
74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108
143	141	139	137	135	133	131	129	127	125	123	121	119	117	115	113	111	109
144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110

54-40" — Looms Nos 73 to 90 — 109 to 144

OVERSEER.

FIG. 2

THE NEWPORT COLORS

Vat Dyes

The following are immediately available as pastes and correspond in other respects to Indanthrene colors of the same designation:

Newport Anthrene Blue G C D Paste
Newport Anthrene Dark Blue B O Paste
Newport Anthrene Blue R S Paste
Newport Anthrene Green B Paste

NEWPORT
TRADE MARK
"COAL TO DYESTUFF"

NEWPORT CHEMICAL WORKS, Inc.

PASSAIC, NEW JERSEY

Branch Sales Offices.

BOSTON, MASS.
PROVIDENCE, R. I.
PHILADELPHIA, PA.
CHICAGO, ILL.
GREENSBORO, N. C.

TAPE for spinning and twisting frames is a staple, and there's not much to say about it, but you can depend on it that

K-G SPINNING TAPE

is as good as can be bought—an honest product, the finest woven, the smoothest edges. The quality and stamina is there, and you have only to use it to be convinced of its superiority. Sample upon request.

THE TAPE MAN SAYS

"The fellow that wrote 'From the errors of others a wise man corrects his own' had the right idea. The K. G. people studied the bad points of other tapes and made a tape that was RIGHT."

Knit Goods Specialty Co., Chicopee Falls, Mass.

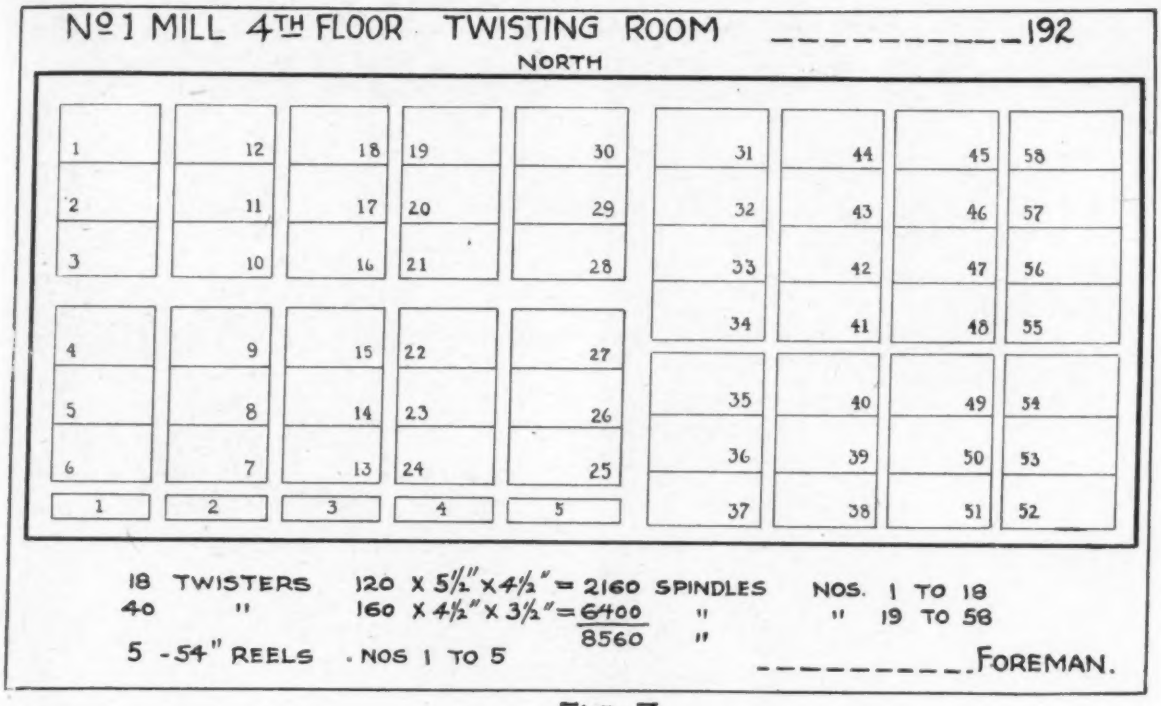


FIG. 3

available floor space, fixers' sections, machine number, space allotted to each machine, broken down machines, machines being changed over.

All these will provide some very interesting as well as important information—for example, in a weaving department. The floor is usually blocked out or laid out in as many spaces as there are machines on the floor. While this does not show the actual size of each machine it does show where each machine is located and the relative amount of floor space alloted to each machine. These spaces, whether in square or oblong shape, give ample room for inserting the amount of fixed information, such as sizes, speeds, numbers, kinds of machines, etc., in ink for permanent reference, while the changeable matters, as the style of goods, help statistics, and idle or operated machinery can be inserted in light pencil marks which can be easily erased. Or this removable information can be entered upon separate tabs to be attached to the sheet at the different spaces by pins and changed as often as is necessary. This method is used by some mills.

In some instances it is unnecessary to mark in pencil any of the changeable matters, as different colored tabs can be used. For example, red tabs may indicate machinery stopped for help, black ones may show that certain machines are being repaired. This saves writing and gives at a glance the real status of things to anyone who is familiar with the code established. The system of using tabs applies only to the permanent desk floor place piece.

The same system can be carried out for the other departments of the mill. Figs. 3 and 4 show the floor plan and the daily report which can be placed on the reverse side for a twisting department.

On the floor plan side of the weave room report can also be shown the names of the weavers together with the numbers of their respective looms, as shown on the plate of the weave floor plan—space having been laid out for this information.

The advantage of all these things being placed daily on the desks of the various men concerned in the management, aids a great deal in carrying out the production movements more in line with the orders. For example, if a certain weaver is reported out, a glance at the floor shows just what looms are stopped, also the goods not being woven. The style of the goods can also be inserted in each loom space if desired.

It has been discovered by some supervisors, who have studied the work and the problems in connection with the floor plan, that certain influences peculiarly effect the production. One superintendent found that one corner of a certain weave room produced less cloth, in period after period, on account of having a poorer light at that point. In another case it was a defect in the speed. It has also been found that certain weavers produce more cloth and earn more for themselves at the same time if they are changed about and operate looms next to a person who is more congenial, or is less bent on spending much time in conversation with the adjoining weaver. Some weavers were absent more frequently than others because their looms were in direct line with air currents and draughts. These weavers were more easily affected by these draughts than others who were prevailed upon to exchange places and who also preferred the cooler corner.

If all these things are taken into consideration and followed up, a much larger production can be secured per loom and likewise per operative. It is all a matter of relative conditions which are best suited to favor the productive side of the business. For example, in one mill it was actually proven that a certain group of looms would not operate so well at one end of the room if certain windows were opened at the top at the opposite end of the

NO MORE OIL STAINS!

NO more oil stains on your yarn. No big greasy splotches on your finished fabrics. SLO-FLO, the tenacious "fluid grease" that doesn't throw, spatter or drip, puts an end to these losses for all time. A scientific lubricant designed to overcome every difficulty previously encountered in the lubrication of textile machinery.

Ask us for the names of mills that have abolished oil stains by lubricating with SLO-FLO. You can use their experience to advantage.

Demonstration on request

SWAN AND FINCH COMPANY
NEW YORK

Quality Lubricants Since 1853

Atlanta, Boston, Buffalo, Charlotte, N. C., Chicago, Cleveland, Detroit, Greenville, S. C., New Orleans, Philadelphia, Pittsburgh, San Francisco, Syracuse

CATARACT REFINING CO., Ltd., Toronto, Can.; London, Eng.

"Scientific Lubricants for Scientific Lubrication"

SLO-FLO

The Scientific Lubricant for Textile Machinery

No.1 Mill West 4th Floor Twisting Daily Report
Hours Run____

STANDARD NO. OF YARN	ACTUAL NO. OF PLIED YARN	SPINDLES RUNNING	CLASS OF STOCK	TURNS OF TWIST PER INCH	HANKS PER SPL. PER WEEK	COMBED OR CARDED	MADE FOR STYLE	REMARKS

FIG. 4

room. It was all due to the air currents passing over the looms nearer by and interfering only with those furtherest away because they were more in direct line with the draught. The same thing occurs when there is an improper distribution of the humidifying arrangements.

There are also electrical disturbances which interfere with production. A loss of production was noticed on a group of looms which were jarred by a bent or crooked shaft underneath the floor. The constant thumping reduced the efficiency of both the weaver and the loom.

It is well to study the floor plan and the various layouts in connection therewith, and the relation of the layout to the production per machine. In these days of very close figuring it is well to note all of the things which may, directly or indirectly, interfere with the product and its very important quality. It is also important that not only the product and quality be right but that the product should be produced with as little waste as possible of raw materials and supplies, also repairs. By following up the repairs per loom, trace can be made of excessive supplies, and repairs per weaver, per section or per department. Some mills know definitely the exact cost of both the supplies and repairs per loom by number, also the cost per weaver and by sections, by simply adding the lists separately.

Sometimes overhead counter belts which are not properly enclosed will play havoc with a whole section of looms. It is the same way with an overheated corner, sweating cold water pipes, steam and water leaks over the looms.

It can readily be seen that there is a long list of things to study in connection with the floor plan and the production available from help and machinery. It is simply a case of relative combination. H. D. Martin (R. I.)

The bulletin of the Lowell Textile School, Lowell, Mass., for the school year 1921-1922 has been issued and is ready for distribution. This book contains 114 pages including much instructive information concerning the school, its history, etc., and giving full details of each course offered at the institution in the day classes for the coming year.

The Creighton Opener.

EDITOR COTTON:

During my endeavor to describe the procedure to be followed in the elimination of the troubles that confront the average overseer and superintendent, I would like to mention, in passing, a few facts concerning the operation of the Creighton opener, or vertical opener as it is sometimes called. This cleansing instrument we find placed in many different positions. One may have the opener operating in an opening room following the process of hopper opening, while again we find it following a process of beating by a porcupine beater or a blade or a Kirschner; all, evidently, according to the taste of the purchaser.

When we speak of this opener as an opener and use it as such, it is, in my estimation, in its proper place and the best circumstances. For instance, if the construction of the hopper of the opening machine is made in the regular form, having a bottom apron which carries the cotton in the hopper up to the face of the spiked apron, allowing the latter to turn the pile over and over, carrying large pieces up the surface of the spiked apron, then I say a Creighton opener is working at its best, and in the only manner in which it actually has an opportunity to demonstrate its actual worth, for if the hopper throws large flakes of cotton to this vertical beater (it being constructed spirally), before the cotton leaves the top, it has passed through a wonderful process of opening that greatly adds to its credit.

Under this condition the large flakes are thrashed against the cone shaped side plates and a considerable amount of seed and leaf is thrown through the openings, all this helping to make good yarn. Of course, there must be a strong air draft to lift the flakes of cotton at least as far as the first protruding arm at the base of the opener, and must allow that the draft be strong enough to draw these greater or smaller pieces toward the top of the outlet.

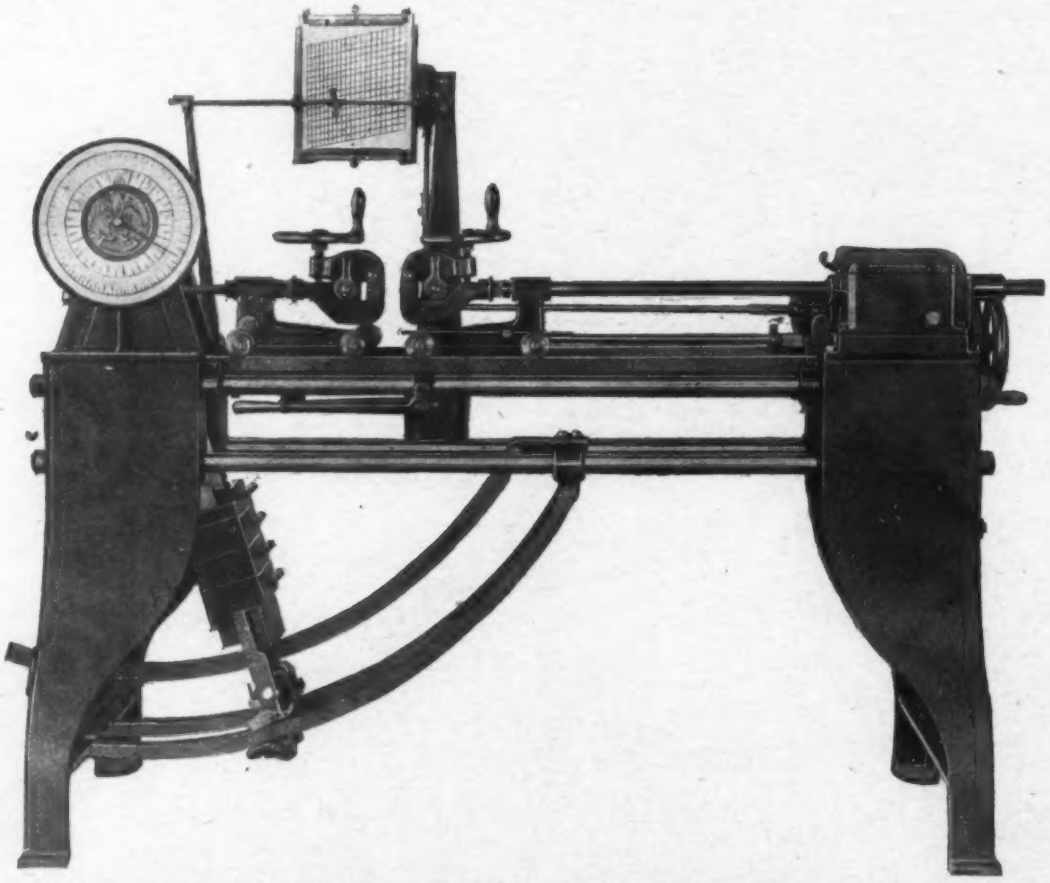
By using this strong draft we lose a great amount of

SCOTT TESTERS

(PATENTED)

The sensitiveness, accuracy and simplicity of Scott Testers combined with their heavy construction makes them equally well suited for routine mill work and laboratory experiments.

In mills using such equipment the closest of relations between the laboratory and the various departments exist.



This cut shows our horizontal type tester equipped with autographic recorder. The great value of permanent chart records is universally realized and tests so recorded on this machine are indisputable.

The vertical type machines with autographic apparatus produce permanent records of yarn as well as fabric tests.

Complete information upon request.

HENRY L. SCOTT & COMPANY

PROVIDENCE, R. I.

ESTABLISHED 1899.

the opener's efficiency for while we remove a certain amount of seed and sand we also draw back a tremendous quantity of the same thing together with a great quantity of leaf thereby defeating the maximum efficiency. But we must admit that we still have a very good opening process in this member, and no doubt a whole lot cleaner yarn by using it, for when we open our cotton and loosen it we can get the dirt out all along the process as far as the slashers, by chafing over creel rods, through guides travelers, etc.; but why not remove the leaf and dirt where we should and give the credit to the machines which are supposed to do this work; why pass the buck, so to speak. Using this sort of a process only adds another operation to the already burdened fiber.

Now, for the reverse side of the conditions surrounding this opening process. By going back to the hopper with the gravity back—both in the opener and breaker picker—getting the conditions there corrected so that the cotton delivered through the first set of feed rolls as described in the preceding paragraphs is soft and fluffy, and from there on having a blade beater or a porcupine beater feeding into a Creighton opener or a beater as it should be called in this case, we find that because of the thorough opening behind the latter we lose again the maximum efficiency because the fibers are so light in their flight from the blade or porcupine beater to the cages through the Creighton beater that the results in dirt seem very small when compared to the exertion performed.

Personally, I prefer the minimum operations for opening and positively making each part perform its duty properly; apply air to the process, wherever possible, do away with all severe beating processes, get the cotton loosened and separated from itself without harsh treatment and, in doing this, I feel that energy in every sense of the word and money beyond all expectation is saved. My candid opinion is that a Creighton opener is wasted energy when compared to the results around its installation. The average mill man has a tendency to forget that he already has in his mill the installation to manufacture good, even, clean yarn if he would but dig the conditions out and use them, and if the results are not as good as one ought to expect, if somewhere in the line of operation some group of machines are wasting some of their efforts —make them go to work!

While my opinions of certain machines or parts of machines do not coincide with those of other mill men, I hope that the theme of these friendly suggestions will help some person to get his mind settled by experimenting with these suggestions, and perhaps after all he may see his way clear to adopt them. I assure those who make the experiments that the results will give everything expected. If anyone becomes entangled while experimenting, I will gladly help him through if he will but ask questions through the columns of COTTON.

A. B. C. (R. I.)

Advertising occupies a place in the business world which no other force can fill. There was a need for advertising long before it was born. It is a power whose growth is measured by the service that it renders—and the growth of advertising has been tremendous.

"Jimmy" Is Still Alive.

EDITOR COTTON:

"M. W. H. (Mass.)" in COTTON for January, speaks of "The automatic loom invented by Henry Northrop," and says that, "Northrop died in poorer circumstances than he should have." This comes as somewhat of a surprise. James H. Northrop to my certain knowledge is yet alive and flourishing. No one ever knew him as "Henry," in fact, none of us ever called him anything but "Jimmy". In the old days Jimmy was a well known feature in the community. I remember when he sailed his boat in a regatta for a silver anchor, same craft containing many of his own original ideas in rig and form. I remember when he won a road-race on a bicycle from Hopedale to Worcester, a good eighteen miles. He was a genius to the core, if we interpret the term as signifying originality and the desire to do things differently. It is from such men that all changes originate and yet ninety-nine per cent of his associates believed him a freak and a failure up to the ultimate moment of success.

As to the implication that he was not paid properly for his inventions, it is difficult to determine the answer. The old firm of George Draper & Sons paid many an inventor one-half the net profits of an idea. Wade, the inventor of the bobbin-holder and Doyle, the inventor of the separator, made fortunes out of such contracts.

Had Northrop received such a share he might have made millions, but no such chance was given and no such contract could have well been made on a machine having many associate inventions and many conflicting interests. The inventions contributed by General Draper and his sons received not one cent of pay apart from our share in the returns from our property interest. Other partners who contributed no ideas got just as much relative return. It all comes back to the question of bargain and sale. "Jimmy" got all that he contracted for. A little more care in affixing one's name to legal documents is often advisable; the documents might possibly be revised before adoption.

G. O. D. (Mass.)

Settings for 7s and 8s Yarns.

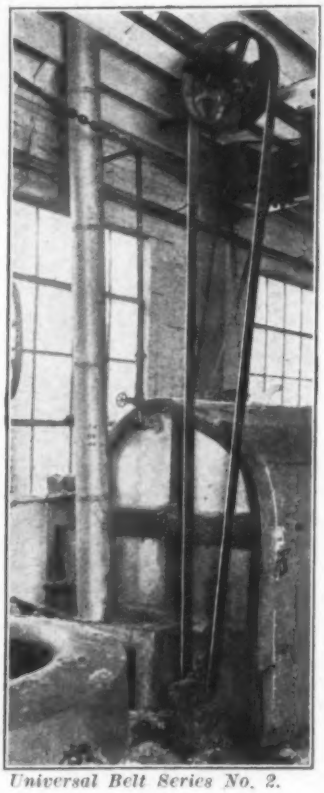
EDITOR COTTON:

Some time ago I submitted to you some questions in regard to the best methods and settings to be used in making 7s and 8s yarns, and these questions were published in the January number.

I have read with much interest the answers to these questions which appeared in the March number, from several mill men. I agree with all these men on some points, but of course do not agree with all the points of any one of them. However, I must say that they are all good and the men who have submitted them must all be well experienced in manufacturing. I assure you that all the answers have been a great help to me. As you know, there is no one man who knows it all, and you can readily see that hardly any two men will agree on all points, but by getting all together and boiling them down, there is some good dope obtained.

I have been experimenting quite a little along these lines, and am going to give you my lay-out which has been very satisfactory. I will appreciate it very much if you

Another Unusual Belt Condition—



Universal Belt Series No. 2.

Here is a 3″ RUSCO Solid Woven Belt running a washing machine from a 12″ to 3″ pulley at high speed

The room is filled with moisture and the air with cotton and wool dust which clings to the surface of the belt. Yet it delivers full power and does not slip.

RUSCO SOLID WOVEN BELTING

The special RUSCO weave insures long wear and great tensile strength. The RUSCO impregnating makes this belting impervious to oil, dust, acid fumes, etc.

If the conditions in your plant are unfavorable and wearing to the belts you are now using, it will pay you to get in touch with our Service Department.

RUSCO is a dependable belting. It has replaced more costly belts in many plants.

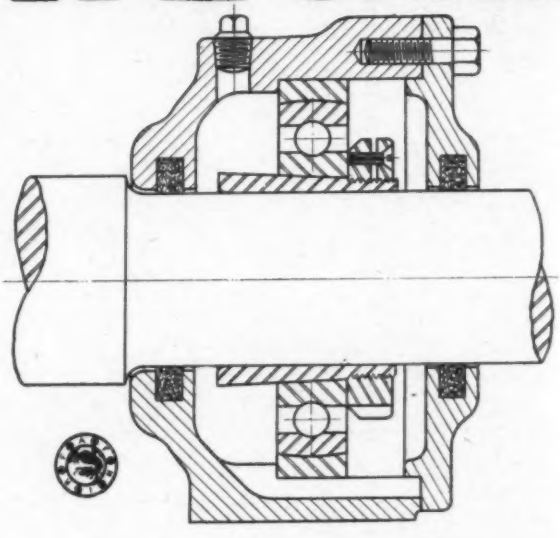
The Russell Mfg. Co.

526 Russell Ave., Middletown, Conn.

Branch Offices

New York, 349 Broadway. Chicago, 1438 Michigan Ave.
Atlanta, 60 S. Forsyth St. Detroit, 162 Jefferson Ave., E.

FAFNIR



Four Big Reasons for Equipping Your Card Cylinders with Fafnir Self-Aligning Ball Bearings

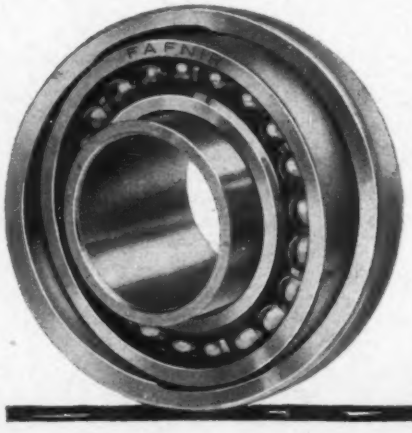
They are—

(1) **Narrower belts.** You know that with plain bearings the belts must be at least 3″ wide to withstand the starting loads. With **Fafnir Self-Aligning Ball Bearnigs**, 2½″ and sometimes 2″ belts will do the work.

(2) **Oiling.** The bearings are so located that it is hard to reach them with the oil can. Once in **3 months** is enough to grease **Fafnir Self-Aligning Ball Bearings.**

(3) **Cleanliness.** Many dollars' worth of card clothing and cotton are ruined every year by oil which leaks out of plain bearings. **Fafnir Self-Aligning Ball Bearing Boxes are sealed and can't leak.**

(4) **More accurate setting. Fafnir Self-Aligning Ball Bearings** are made from heat treated alloy steel and are virtually wearless. Consequently, closer setting of the cylinder can be maintained **permanently.**



THE FAFNIR BEARING CO.

Conrad Patent Licenses

NEW BRITAIN, CONN.

DETROIT Office:
752 David Whitney Bldg.

CLEVELAND Office:
916-917 Swetland Bldg.

CHICAGO Office:
537 So. Dearborn St.
1301 Michigan Ave.

NEW YORK Office:
5 Columbus Circle

will give this space in an early issue of COTTON, and would like to have the readers comment upon it.

As I have previously stated, I only run two processes of picking, making a 14 ounce lap. I have the feed rolls on the breaker set ⅜ inch from the beater, using a three-blade beater. On the finisher picker, the feed roll is set 5/16 inch to beater, using a Kirschner beater.

On the cards, I have the following settings: Comb to doffer, 22 gauge. Stubbing comb, 22 gauge. Doffer cylinder, 7 gauge. Feed plate, 12 gauge. Front plate, bottom, 22 gauge. Front plate, top, 29 gauge. Back plate, bottom, 22 gauge. Back plate, top, 29 gauge. Top mote knife, 10 gauge. Bottom mote knife, 7 gauge. Flats to cylinder, 10 gauge. Back screen, 22 gauge. Screen to licker-in, 10 gauge. Middle screen, 34 gauge. Front screen, ¼ inch.

In the drawing, I am making a 62 grain finished sliver from a 55 grain card sliver, and have my rolls set as follows: 1st to 2nd, 1 7/16 inch on center; 2nd to 3rd, 1 9/16 inch on center; 3rd to 4th, 1¾ inch on center. I am not sure that I am not a little off on the roll settings, but we are getting very good results. However, I expect to try other settings.

On the slubbers, we are producing a 48 hank roving from a 62 grain sliver, and have the following roll settings: 1st to 2nd, 1⅜ inch; 2nd to 3rd, 1 9/16 inch.

We are producing a 1.10 hank roving on the intermediates from a 48 hank roving—double—and have the following settings on the rolls: 1st to 2nd, 1 9/32 inch; 2nd to 3rd, 1½ inch.

I hope to see more answers in COTTON, and am anxious to have other contributors comment on this lay-out.

Supt. (Ga.)

STATEMENT

of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of COTTON, published monthly at Dalton, Ga., for April 1, 1921.

State of Georgia, County of Fulton, s. s.

Before me, a Notary Public, in and for the State and County aforesaid personally appeared W. J. Rooke, who, having been duly sworn according to law, deposes and says that he is the Business Manager of COTTON, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit.

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, W. J. Rooke, Atlanta, Ga.

2. That the owners are: W. R. C. Smith, Atlanta, Ga.; E. P. Smith, Atlanta, Ga.; W. S. Cushion, Cleveland, O.; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or any other security holders are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

W. J. ROOKE, Bus. Mgr.

Sworn to and subscribed before me this 1st day of April, 1921.

(Seal) JOHN C. MARTIN, Notary Public.

My Commission expires June 20, 1924.

An excellent proof of wisdom is a willingness to admit ignorance.

It's the second mistake that counts.

Watch the Drawing and Fly Frames.

EDITOR COTTON:

Many writers and textbooks state that carding is the most important process in cotton yarn preparation, and is the basis for strong or weak yarn. On this point there can be no argument. However, it must be admitted that "perfect carding" is often changed to "imperfect carding" in after processes.

For instance, let us consider the methods employed by many drawing tenders in piecing up. On a drawing frame equipped with the mechanical stop-motion, it is common for the tender to start the frame before the piecing is made; then after the frame is in operation, the sliver is given a swing, and nine times out of ten the sliver will land on one of the other slivers, and not in the space where the sliver ran out. This method makes bad piecings, and besides causes single. On the electrical stop-motion the metal roll must be raised, but many tenders will raise this roll and give the sliver a swing as in the case of the mechanical stop-motion.

Overseers of carding should insist that the end of the sliver running out be raised and the end from the full can placed under this end. When the end from the full can is swung on or laid on the sliver running out, in most cases, the end from the full can will curl and cause what is termed a "bring-up" at the trumpet in front of the drawing.

Next, let us consider the harm done to perfect carding on fly frames. Let's take it for granted that the tension should be perfect by running the proper flyer, cotton, hank and speed to suit the intermediate speeds of the cones. Most mill men would tell you that in such a case, a perfect strand of slubber roving would be the result. But when the flyer is considered and studied, it is often found that much defective work is caused from the bottom of the hollow leg to the surface of the bobbin. It is impossible to obtain the figured twist on any fly frame, and why? Simply because the strand is firmly held at the drawing rolls only. If the strand of roving was held as firmly at the termination of the presser finger, the figured twist could be obtained and in no other way.

Therefore, twist is lost at the termination of the presser-finger even if the function of the flyer be perfect. The presser finger should be rounded so the termination of the presser finger only will rest on the surface of the bobbin. Now picture in your mind what happens when the eye of the presser finger rests on the surface of the bobbin. Any presser finger in such a position will not only injure the strand, but will allow a great amount of twist to escape which is due to the groove found under the presser pad. It should clearly be seen by examining any presser pad that this groove resting on the surface of the bobbin forms a space which allows the twist to escape. Again, it should be seen that if one flyer presser finger is shaped properly and another is defective, each bobbin will be of a different diameter.

Many mill men are puzzled because some mills turn off a greater production on their fly frames, the conditions being the same. The point outlined is one reason.

The bobbin lead fly frame is imperfect to begin with and it takes an expert to obtain a large production of the highest quality.

Wash (Conn.)

BLEACHERS!

Would you install a process that would be better and cost no more and for which no new apparatus was needed?

Would you prefer to have no "seconds", no chance of damage, one-third the labor, water and coal, the highest elasticity and softness?

On cottons as well as on woolens and silk?

All this you get only with the Peroxide Bleach.

Technical advice free to mills.

THE ROESSLER & HASSLACHER CHEMICAL CO.
41st St. and Sixth Ave.
NEW YORK

Roving Frame Difficulties.

EDITOR COTTON:

The cones of a cotton roving frame are its most essential features, as upon them depends the perfect winding of the bobbin, and the more accurate their outlines, the more perfect the roving that is produced.

The cones may be figured out theoretically correct with the bobbin and the spindle traveling together, aside from the motion of the periphery.

Perhaps rather than to say theoretically correct, one should say before the additional factors of slippage, or differences in tension between the empty and full bobbin due to the slight variation in the pressure of the paddle and the differences in the diameter as the bobbin builds up. These things brand the fly frame as the most imperfect machine in the cotton mill. When the other factors are considered a pair of cones can be figured out correctly by mathematical methods. After these mathematically correct cones have been arrived at, several other factors, including those mentioned, must be reckoned with, and the form of the cones modified. Each of these factors, in part, can be arrived at mathematically, but some, such as the amount of compression in the building up of the bobbin, certainly have been checked up in addition to a mathematical computation. Therefore, the cones have been modified to get a uniform tension from an empty to a full bobbin.

My belief is that these additional factors sufficiently complicate the making of the correct form of the cones, without the added complication of differences in speed between the spindle and the bobbin, as found on our latest fly frames. It also follows that variation in speed between one frame and another will require a different cone, and that different cottons and different hanks, to give perfect tension, will require different cones. By having a cone for different ranges of hanks and the frames run at precisely the speed at which the cones were figured out and for which the flyers are built, a practically perfect tension is accoplished.

It is an easy matter to give orders to have this or that machine speeded, but to run a fly frame at the proper speed is not so easy.

Let us assume that the cones of a fly frame are modified for a spindle speed of 1,100 r. p. m. and the speed is increased to 1,300 r. p. m. What happens? Why, the compression is increased, for the higher the speed the more the pressure at the termination of the presser pad. This prevents the bobbin from increasing in diameter to suit the outlines of the cones, and the relationship between the cones and flyers is destroyed. Again, the faster the frame is run, the more the frictional contact is increased on the front leather roll. That is why an allowance is made in spacing the rolls for a high speeded frame. The second roll offers more resistance to the front roll for the reason that the space of time is too little and the number of fibers to be acted upon instantly is too great. Therefore, such a condition aids in making a tight tension and destroys the surface speed of the front roll and bobbin.

These are facts, and also the cause of one carder getting more out of fly frames than another fellow.

Williams (Conn.)

The Practical Technic of Mule Spinning

BY ARTHUR L. BURTON.

(ALL RIGHTS RESERVED BY THE AUTHOR.)

About Filing the Rail and Plates.

No person incharge of mules should be allowed to file either the copping rail, or plates, unless he is absolutely sure, beyond any question of doubt, that it is necessary. Many a copping rail or plate has been spoiled, and many hundred hours of production have been lost on mules through fixers filing some part of the copping mechanism, and then finding that instead of curing the trouble they were after, they have really made matters worse than they were before.

A good rule to follow is: "Do not file either rail or plates unless it is absolutely necessary."

Before going into the detail of filing copping mechanisms, we will devote a little attention to the possible effects resulting from different shapes of copping rails. It must be borne in mind that the copping rail governs the winding of the yarn on the cop, the plates governing the shape of the cop. In other words, it is the business of the rail to wind the yarn on the cop, the plates supporting the rail, and owing to their peculiar shape, imparting a motion to the copping rail resulting in an accumulation of yarn on the spindle of a definite shape, known as a cop.

The reader naturally desires to know just what would result if he were to file a section of the rail. He may be troubled with a bad nose on a cop, and have an idea it is the rail causing the trouble, in which case, nine times out of ten he submits to the temptation to try a little filing, sometimes with dire results. For the benefit of the man who wants to know just what happens when filing has been resorted to, and yet who wishes to get this information without filing, I advise getting some thick packing paper. Cut this into long strips of the same width as the rail, and then lay the strips on the rail everywhere except where he imagines the rail needs filing. He should not put any on the loose incline. For instance, if he should think that the crown of the rail would be better with a 1/16-inch taken off with the file, let him lay 1/16-inch of paper over all the rail except over the crown. He need not be afraid as no harm will result to the mule. Then let him start it up. He may have to turn the quadrant nut up a trifle and it would be better to get a colored roving. After running the mule a draw let him stop it, take the cop off the spindle, and examine the coils of the yarn laid on. By taking a cop off the spindle before he makes the experiment he can compare the manner in which the coils of yarn are laid on the cop with the colored yarn. By shifting the paper strips about the rail many effects can be obtained, rather surprising at times.

Or he may imagine he has a copping rail that needs filing at the nose. Then lay the paper strips all over the rail except at the nose, and start the mule up. Again compare results.

Besides convincing a man that the rail is all right in most cases, it also convinces a man that the rail is really wrong sometimes, and shows him just where it is wrong. However, there has been many a rail filed unnecessarily, in fact that is so in 90 per cent of the cases. If the cop has too thin a nose, don't go to the rail until everything else has been gone over many times. In most cases the profile at the bottom of the boot-leg is worn so that the copping faller wire travels upwards too quickly when at the nose of the cop. Bear in mind, as stated before in these articles, that absolutely no motion must be imparted to the copping faller wire during the winding except from the copping rail. It should be noticed that the monkey tail strikes the unlocking bracket from six to nine inches before the mule beams, and if the profile is badly worn, there is a quick motion of the copping faller wire up the nose of cop, making it very thin, and giving the impression that the rail has too much fall at the nose. If the nose of the cop is very thin, as stated, there are also too many coils of yarn on the spindles, this being a nuisance during backing off.

If the cop nose is too thick, look to the same place as before and it will probably be found that the boot-leg profile is to blame. In this case, however, the copping faller wire is forced downwards during the unlocking, counteracting more or less the action of the rail. This puts more yarn on the cop nose, causing it to be lumpy. The spinner is forced to have an early unlocking, to avoid cut yarn. I would much rather humor the boot-leg profile than file a copping rail anytime. It is easier done, cheaper, and absolutely sure in results.

The question now arises as to what the crown of the rail really is. If a straight edge be laid on the rail from the shoulder up towards the nose it will be found that the rail is straighter in the first half near shoulder than in the last half near nose. Now follow the explanation closely. We will suppose the length of the rail from the the shoulder to the nose is 50 inches. That means that around 50 inches of yarn have to be wound on the cop from the shoulder to the nose. Seeing that the cop chase is of varying diameter throughout from the shoulder to the nose, it is reasonable to assume that the speed of the copping faller wire must vary slightly from the shoulder to the nose of the cop chase in order to properly wind the yarn on the cop. For this reason there is a slightly rounded section of the rail in the half nearest the nose. As the bowl on the copping rail is traveling over the crown the copping faller wire is retarded slightly in its movement towards the nose of cop, laying the spirals of yarn in closer formation as it approaches the nose proper, when the bowl leaves the crown and enters on an incline allowing the copping faller wire to travel more quickly up the nose of the cop. If the rail was straight, the copping faller wire would travel upwards over the chase of the cop at the same speed throughout, and there would be a resulting lack of harmony between the copping mechanism and the quadrant.

Of course the variation of the speed of the copping faller wire is so very slight as to be scarcely noticeable, the quadrant performing its duties of gradually increasing the speed of the spindles during the winding to properly wind on all the yarn necessary, but, nevertheless, the retardation of the copping faller wire when the bowl is pass-

The Chicago

APPROVED PORTABLE

Watchman's Clock

With its special Waltham movement, its lock stations and its superior quality throughout, is especially desirable for mills and factories and for either indoor or out-door patrol.

Write for booklet

Repair Work Efficiently and Promptly Done.
Dials at Lowest Prices.

Chicago Watchman's Clock Works

CHICAGO
1526 S. Wabash Ave.

NEW YORK
11 Church St.

ATLANTA
14 Walker St.

Cashing in on Buying Habits

A FEW years ago we bought on luck. Today we buy on belief. We eat trade-marked food. We wear trade-marked clothes. We drink trade-marked beverages. We have learned to buy on belief—our belief in the manufacturer's own faith in his goods—and his trade-mark is a symbol of his faith.

The textile mill that trade-marks its goods is capitalizing on its customers' buying habits. It is demonstrating its good faith to its customers, and earning their respect and good will.

Textile mills that trade-mark with Kaumagraph Dry Transfers testify that it is the one practical method—quick, easy to apply by hand or machine—legible to read—economical to use.

Kaumagraph
(REG. U. S. PAT. OFF.)
(Dry) Transfers
"The Practical Way"

KAUMAGRAPH COMPANY
Sole Manufacturers, 209 W. 38th St., New York
Branches at
Boston, Chicago, Philadelphia, Hamilton, Ont.

CEMENT COATED NAILS

2d.—1 in. x No. 16.
3d.—1¼ in. x No. 15½.
4d.—1½ in. x No. 14.
5d.—1¾ in. x No. 13½.
6d.—1¾ in. x No. 13.
7d.—2¼ in. x No. 12½.
8d.—2½ in. x No. 11½.
9d.—2¾ in. x No. 11½.
10d.—2¾ in. x No. 11.
12d.—3¼ in. x No. 10.

SERVICE SUPREME

COUNT AND QUALITY GUARANTEED

Readjusted Prices have been made by us on Cement Coated Nails. Buy from the largest manufacturers.

STEEL & WIRE PRODUCTS CO.

Warehouse and Office
14 WALKER STREET, ATLANTA, GA.
Several Thousand Kegs Kept in Atlanta Stock.
The Lovingood Co., Branch Managers.

ing over the crown is of great assistance to the quadrant in properly winding and coiling the yarn on the chase of the cop. The length of the crown of the rail varies somewhat in different makes of mules, but the general average on the long copping rail is about 12 to 16 inches, and is placed to begin at about 3 to 6 inches from the nose of the rail, extending towards shoulder of the rail.

It should always be borne in mind that quadrant and copping rail are a well balanced unit and any filing of the copping rail will affect the winding in proportion to the extent of the filing operation. A good plan (especially on old mules) is to select a mule making a perfect cop in every respect, and have a template made of the rail profile, which can be used to good advantage in filing operations, and for testing other rails. It is also a good plan, in some cases, to have a spare rail, as sometimes filing a rail to template (especially if it be worn badly) is a long and tedious operation, and on no account should it be put to work again until it is perfectly fitted to the template.

Copping plates should not be filed. If a plate is spoiled it is much better and cheaper to get a new plate from the maker than to keep stopping the mule, losing production, while plates are being filed. However, there are cases where filing has been a great help. In using tubes on fine work, it has been found that much less waste is made during the winding or weaving by using a longer tube than was used on coarse yarns. Some mills use a straight tube, say 1 inch long, some a little longer, say 1⅛ inches, some 1¼ inches, and so on. It is necessary for good weaving or winding that the yarn be tightly wound on the tube, especially over the top of the tube.

Fitting tubes is an important point that should not be lost sight of. If it is found that a slightly longer tube is better for subsequent processes in most cases it is found to be worse for the spinner to handle, especially on fine work. A great deal of help can be given the spinner in most cases. If a cop chase is correct at the top of the cop, and it is not desired to alter it, yet at the same time it is desirable to use a longer tube without altering the rising screw on the front end of the rail, then take out the back plate and file as shown by the dotted line in Fig. 16. This will lengthen the chase just where it is needed, and covering the cop tube with yarn at a good tension will be a much more efficient and easy task for the spinner. Tubes should extend into the cop bottom far enough to have a firm hold, and the hole through the cop should be absolutely clear. Tapered tubes should be used whenever possible especially if the length of tubes used is over 1 1/16 inch. Straight tubes longer than this do not hug the spindle at the top, and cause a soft nose at this point, which shows up in the winding or weaving, especially after the yarn has been conditioned.

Filing the back plate as shown in Fig. 16 lengthens the chase on the tube according to the amount filed off, without affecting the length of the chase on the body of the cop.

If it is desired to lengthen the chase at the finish of the cop, without altering it in the bottoms, loosen the lock nuts controlling the back plate, at doffing time, and bring the back plate nearer to the front plate a few squares. This will shorten the chase in the cop bottom right after doffing, but before starting mule up, lengthen the chase by the rising screw on the front of the rail to the original length of chase before altering the back plate setting. The cop will then finish up with a longer chase than before (according to amount given on the rising screw) yet the chase will remain the same in the bottoms.

Filing the front plate as shown by the dotted line in Fig. 17 will shorten the chase as the cop builds up, by decreasing the bevel in the rail more than was intended when the mule was built. This should not be done, however, only in extreme cases, where it has proved useful, such as in hosiery mills where a large cop is made and as much yarn as can possibly be got on the cop is wanted. If it is not done carefully, however, a great deal of waste sometimes results in after processes through the imperfect winding of the yarn on the cop chase. Exhaustive tests in these cases should be conducted before going ahead and changing them all over. Even after all is set and proved correct on a sample mule (that is, a mule where these experiments are made, and usually one with a good spinner)

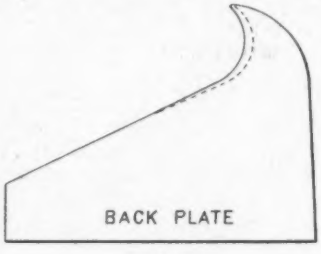


FIG. 16

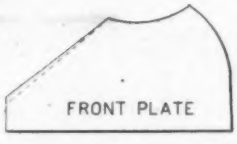


FIG 17

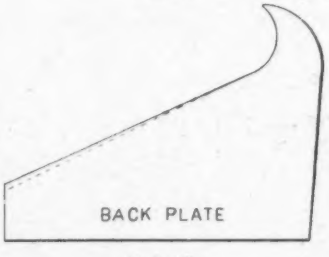


FIG 18

the rest of the plates in the room should not be filed, but planed in the machine shop to the correct measurements.

Filing or planing a back plate similar to Fig. 18 will lengthen a chase as the cop is finishing up, but this is so rarely done or so rarely necessary as to need no elaboration here. It should be kept in mind that either of the last two illustrations of filing or planing front and back plates will affect the outside diameter of the cop, as also its shape.

One would naturally suppose that after planing a plate similar to Fig. 17, the cop would increase in diameter as the chase shortened at the top of the set, and in proportion to the amount planed off. However, the opposite thing results. The cop thins out, regardless of the chase shortening. This is because the rail is falling quicker than it did before the plate was planed, or filed, and the only thing which will bring the cop back to its normal diameter,

MAIN OFFICE AND WORKS
PROVIDENCE, R. I.

NEW YORK OFFICE
HUDSON TERMINAL BLDG.

THE TEXTILE-FINISHING MACHINERY CO

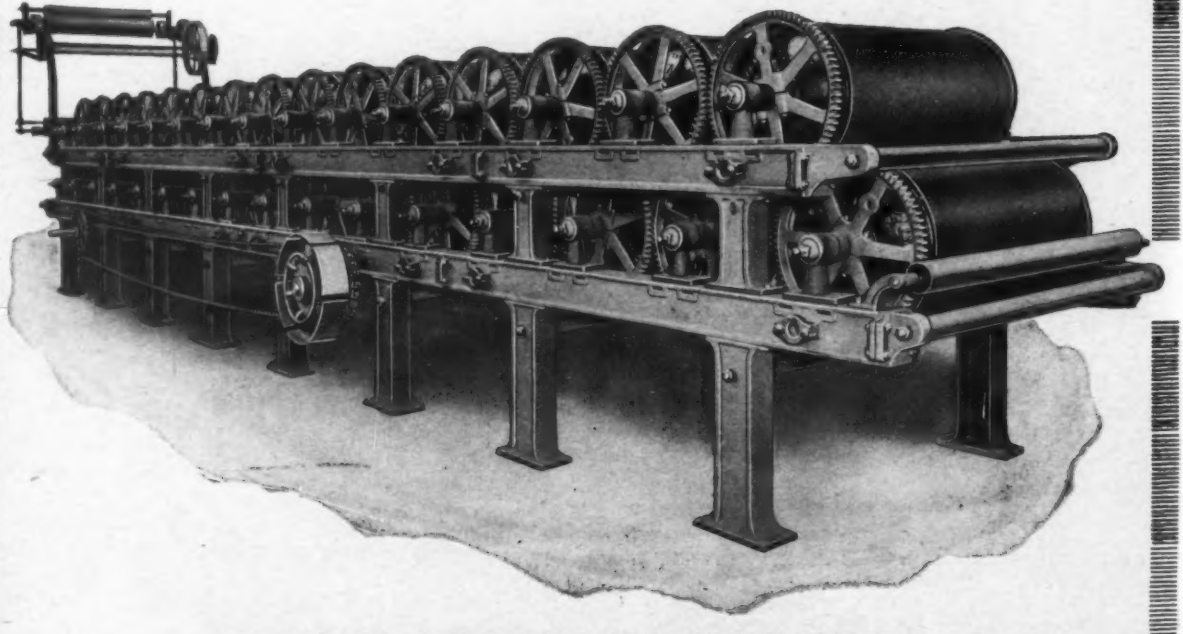
CANADIAN REPRESENTATIVES
WHITEHEAD, EMMONS LTD.
MONTREAL

SOUTHERN REPRESENTATIVE
H. G. MAYER
CHARLOTTE, N. C.

YOUR INQUIRIES SOLICITED

FOR

Machinery for Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Textile Fabrics and Warps.



THIRTY-ONE CYLINDER HORIZONTAL DRYER

SEE PAGE FACING INSIDE BACK COVER.
ADDRESS ENQUIRIES DEPT. P.

is throwing the sector off center as much as is necessary. It will be found that the whole cop will be thinner now (although it may be straight) and a bigger builder wheel may be put on.

A radical change should always be conducted on one mule only and tests made over a period of time. Everything necessary to be done in order to get satisfactory results should be noted then, before altering the whole room. Better still, if radical changes are about to be made, an expert fitter should be hired to work with the overseer of that department and both should then proceed as already noted.

The loose incline and its functions are too well known and generally understood to be elaborated upon here, but in conclusion of this treatise on "copping" it might be stated that the loose incline should be set so that the copping faller wire will lock, or bind, the coil of yarn forming the nose of the cop every time the mule backs off. By setting the loose incline plate (or locking plate) so that the copping faller wire will lock just below the nose of the cop in the bottoms, it will be observed that the profile or shape of the locking plate is such that the copping faller wire will gradually lock deeper and deeper as the cops finish up at doffing time. It is essential that the copping faller wire lock deep enough to bind the nose of the cop tightly in order to get a good readying cop, otherwise a soft nose or poor readying cop will result.

Finally, always keep the faller wires and sickles true to measurement, sampson head levers, chains, and weights well-balanced, faller shafts clean and oiled, and backing-off chain reasonably tight. Unless automatic nosing motions are used, and working well, spinners should be ordered to apply a certain amount of nosing peg, and should watch quadrant bands closely. Although the mule is a complicated machine the various motions and parts can be kept in good shape and position by systematic oversight.

[This is the fifth and last of the "copping" series proper. An article on adjusting the mule will follow.]

The Kaumagraph Company announce that they have opened an office at 40 S. 7th Street, Philadelphia, Pa., which will be in charge of H. A. Keech. This office will cover the southern half of New Jersey, the states of Pennsylvania, Maryland, Delaware, Virginia, and West Virginia.

For the last four years Mr. Leech has been in charge of the employment bureau of the central branch of the Philadelphia Y. M. C. A. In this way he has come in personal touch with a large number of the mill executives of Philadelphia and vicinity. A great many of those who know him personally will be glad to hear that he has made connections with a concern that has been selling them transfers for many years.

It may be interesting to note that the Kaumagraph Company has in the last six months opened offices in Boston, Chicago, Hamilton, Ontario, and Philadelphia. They report not only an increased demand for their goods, but a very active business in the textile mills as far as their product is concerned. They have been running overtime for some weeks. Such a condition is very cheering in the face of some of the reports which are going about.

The best way to avoid danger is to meet it plump.

Young Workers.

EDITOR COTTON:

How many agents, superintendents and overseers—particularly the latter—give the question of our "growing-up" help much thought? The answer to this question is, "Very few," and just why the question is neglected like it is I am unable to understand. If the overseers in our mills would only stop and consider that 90 per cent of the help in a cotton mill belong to the younger class, I am sure they would give the subject more consideration. I have heard some overseers say that they wished they could get rid of all their younger help. And these were considered to be A-1 foremen!

There must be reasons for this attitude of an overseer, and I think some of them are: he doesn't understand how to handle young help; he thinks they should be as set in their ways as the older people; he thinks that everything a young boy or girl does is wrong; and lastly, the most flagrant excuse of all, that they are not worth what they are being paid. What a pitable situation for an overseer to be in when he, himself, is to blame for that condition.

How many young workers just starting in are spoiled by such men! When a modeler takes a piece of clay to mold, it is up to him to mold it right; he can either make it good or make it bad. There is no question but that some times he may get clay that cannot be worked, but he does not get clay like that all the time. This holds true in the case of an overseer and his young help. He can either make them or break them.

When young help is employed, the general rule, I believe, is to turn them over to the second hand, who, beyond asking once in a while how they are getting along, pays no attention to them until he gets a report that such new hands are of no use and must go. Furthermore, in most cases the second hand will do the discharging as the overseer will be only too glad to get that disagreeable task off his own shoulders.

Some overseers claim it is almost impossible to get young help to do the right thing, and I agree with them if they let the help be handled as in a case which once developed in my room, but which fortunately did not get away from me.

I had been called away from the room and on returning had just stepped up the stairs leading to my room when I heard my second hand yell to someone to "get t'hell in there and clean them heads or get out." By that time I had reached the landing and saw that he was talking to one of the cleaners. Not wanting to interfere at that time, I walked on into the room, surmising that there would be trouble. There was. I had just reached my desk when that cleaner came to me and wanted to know if he was supposed to do something he knew nothing about. I told him he was not as I had just put him to work the day before, a green hand. However, the boy said he guessed he had better go home as he did not think he would like to work in a place where he was going to be abused. I talked with him a while and finally convinced him to stick, and now he is one of the best boys I have.

The day has passed when overseers and second hands can have everything their own way, but this much I do know, that even today you can get almost anything done by asking the help to do it, and not telling them that they

TEXTILAC

(Instead of Enameling)

Process Protects Bobbins and Spools of All Sizes Against Moisture Oil and Wear

Shambow Shuttle Company

Woonsocket, R. I.

Walraven Co., Southern Distributors, Atlanta, Ga.

We also make
Cup Grease
Joint Compound
Silica-Graphite Paint
Waterproof Grease
Flake Graphite
Motor Brushes
Solid Belt Dressing
Paste Belt Dressing
Boiler Graphite
Will send catalog on items checked

Here's how cheaper and more dependable lubrication may be obtained. Use

DIXON'S Flake Graphite

It greatly reduces friction in steam cylinders and valves, lengthens the life of the packing, prevents scoring, reduces blowing and minimizes oil in the exhaust.

Dixon's Flake Graphite cuts the cost of cylinder lubrication in half.

It is very easy to use and its advantages and economies are countless. Would you know how? **Write today for Booklet No. 34 C.**

Joseph Dixon Cruc ble Company

Jersey City, N. J.
Established 1827

GARLAND

FOR MACHINE DRAWING

The GARLAND Loom Harness is Preferred in Many Mills.

Our loom harnesses are especially well adapted for machine drawing because the eyes are of uniform size, stand square, are in perfect alignment and are open just enough for drawing in to the best advantage.

G
TRADE MARK

GARLAND MFG. CO.
SACO, MAINE

Acme DOORLESS Baler

Patents Pending

A 600-lb. bale of **Cotton Waste** measures 60 x 22 x 22 when compressed in the **Acme** Doorless Baler. Consider the large saving in storage room and the greater quantity you can load in cars. Built in numerous sizes and pressure capacities.

Galland-Henning Mfg. Company
MILWAUKEE, WIS.
SOUTHERN SALES REPRESENTATIVE:
THE LOVINGOOD COMPANY, Atlanta, Ga.

must do it. We all know that they have a very bad habit of walking out when things don't suit them. I have always made it a rule never to ask anyone to do anything I would not do myself, and I find it pays.

Some overseers do not like to see the young people having any life in them and the minute they catch them fooling around or doing the least thing out of the way, they inflict a call-down. That is entirely wrong as young boys and girls are bound to have a little fun and I personally would not give a snap of my finger for a boy or girl who hasn't any "pep." If some men at the heads of departments would realize that all young people sent to them are entrusted to their care just as much as their own children at home, I am sure there would be less complaining about the difficulty of handling young help.

However, of one thing I am absolutely certain: The overseer complains about not being able to handle his young help is usually unable to manage his own children, if he has a family at home, and we all know if a man cannot manage that which is his own, he is incapable of even attempting to manage that which belongs to some one else. Therefore, let every overseer take all the interest he possibly can in his "growing-up" help, and soon they will be as valuable as those who have been with him for months, yea, for years, and it won't be long until Mr. Overseer will be in a position to say with pride that he has the best set of young help in the vicinity. K. F. (R. I.)

Belting—How Saved, How Spoiled.

EDITOR COTTON:

"The subject of the shop conference that has been selected for the talk this evening is the 'Use and Abuse of Belting,' and we have samples of the various kinds used in the plant for your examination," said the manager.

"Before we take them up I want to tell of a little matter that came up with John this last week about belt dressing." There was a surprised look went over the room, and one after another of the men looked very sharply at John. He would not meet their eyes, and moved a little uneasily in his seat.

"You know that each of you foremen was provided with a sample of belt dressing for trial and to report the gain that you found, and with the sample was the following rule: 'Do not apply on belt at full speed, put it on when the belt is running slow.'

"Now, John had a very tight mule belt that had hardly run a week, and he had quite a little trouble with the starting of the mule from the roller beam, and so he thought that he would apply the sample to this hard place. But, and here comes in the result, he thought that if he could get it next to the belt just before it went over the pulley, he would stop all the slip. So he took the cake and applied it less than a foot ahead of the piece that was going over the pulley. It seemed to stop the slip, and he put on a little more. Then, all at once the pulley would not let the belt leave its surface, and the two layers of the double belt separated. Long thin strips of the belt came off, and the machine was out of commission."

A hearty laugh went over the room, and they good naturedly chaffed John. "Now, here is the point," continued the manager, "the rule for the use of the preparation was to apply running slow, and the material was thus to fill the pores and make the belt more pliable. It was not to make the leather more adhesive but more supple. That is the reason that a belt holds and drives without slipping."

Tom rose and said, "That brings out something that happened in No. 1 Mill when we put a three ply wider belt on the engine to take care of the load that the extra machinery installed required. The belt was delivered at the time ordered but there was a lot of delay in having the engine in readiness. The belt with the laps made and ready for cementing was in the supply room for at least three months.

"As Decoration Day came on Saturday, the belt men had the belt in position almost as soon as the engine stopped on Friday, took the old belt off, and threaded the new. But the belt would not reach around the space and there were no clamps with rods long enough to bring the ends together. So they rigged blocks and tackle and drew it up all they dared, then left it for a while, drew it up again, and kept at it tight until late Sunday night when they were able to cement the lap so it would hold, but they had to take it up again on Monday night as the belt ran slack all Monday, and some of the machinery was taken off for a few hours.

"If it was only that the natural amount of pliability was gone from the drying of the leather the trouble is explained, although all the overseers thought that somebody had made a mistake in the order, having the belt too short."

The samples of single and double belting were passed around among the men and the question of which was the best for the various drives was eagerly discussed. There was a goodly number that wanted belt hooks or lacing to use for the joining.

When they were asked, "Why," they seemed to hesitate a little. One said, "You can take out the slack quicker," "You always can find a piece of lacing or a belt hook, so you do not have to wait and keep the machine stopped."

Finally one of the older men arose and declared, "You fellows are all wrong. A belt drives only when there is no air space between the belt and the pulley, and the quicker you throw away your lacing and hooks the better. They make the belt jump when it goes over the pulley and it must slip. Use a little more time, get the belt cement and the clamps and you will save production every time. The nearer you can make a belt a continuous drive, like a gear, the more you will find that one machine keeps up with another, and the less you will have to take up the belts."

The manager said, "I am glad that you have taken up this matter of cemented belts and have spoken in its favor. We all understand that there are some places where you cannot use that method, but they ought to be very few. In fact, if it requires a light double, rather than single to properly secure the cemented ends, take it up with the office at once. Continuous, steady running is many times more satisfactory from the production end than high speed. The life of a belt depends on its keeping its elasticity as well as being the proper original width. The minute that you destroy, by a poor fastening, the movement of a belt without side movement, that begins to make poor transmission. Some two years ago I was in one of our munition shops where everything was sacrificed to the high production fad. High speed, tight belts and no lost motion were the rules.

"While I was standing just under an overloaded belt

BOSTON HANK CLOCKS

The Recognized Standard for Accuracy and Durability

Many thousands in use.

Lasts many years.

All parts interchangeable.

Prompt delivery.

Special clocks to order.

Write us your requirements.

Our experience is at your command.

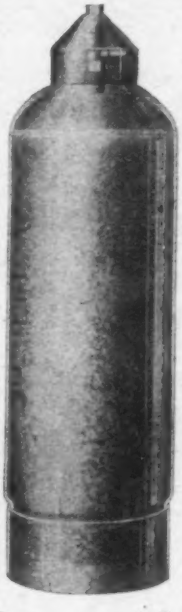
Boston Clocks tell just what the production from each frame actually is

BOSTON MACHINE WORKS CO.
LYNN, MASS. U.S.A.

Offices at
Cincinnati, Ohio. Milwaukee, Wis. St. Louis, Mo.

COTTON MILLS SHOULD USE

Commercial Acetylene For Welding



Supplied in portable cylinders on loan basis without deposit.

Only the purest gas can safely be trusted to meet the exacting demands for cotton mill welding repairs. Commercial Acetylene is a gas of absolute purity.

WRITE FOR OUR SERVICE AGREEMENT

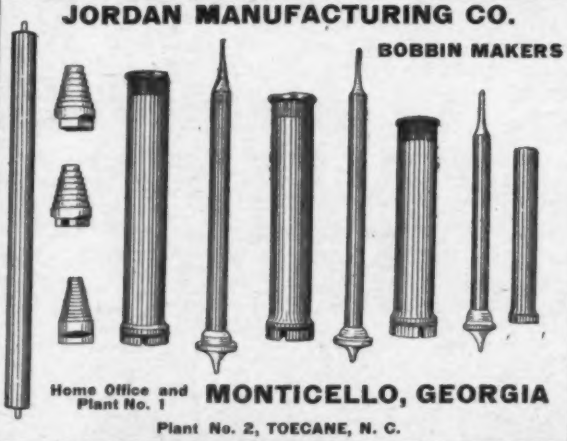
Commercial Acetylene Supply Co.

204 Trust Company of Georgia Bldg., Atlanta, Ga.
Main Office: 80 Broadway, New York City
203 S. LaSalle St., Chicago

Aurora, Ill. East Deerfield, Mass. Boston, Mass. Toronto, Ont. Moberly, Mo. Bound Brook, N. J. San Francisco, Cal. Berkeley, Cal.

JORDAN MANUFACTURING CO.

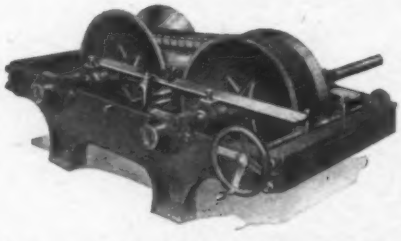
BOBBIN MAKERS



Home Office and Plant No. 1 **MONTICELLO, GEORGIA**

Plant No. 2, TOECANE, N. C.

The Exact Speed Best Suited to the Work



THE use of variable speeds in textile manufacturing operations is probably of more importance than in any other industry, especially in connection with bale breakers, tentering machines, washers, mangles and slashers. With

LEWELLEN Variable Speed Transmission

to drive your machines, your operators can secure the exact speed best suited to the work. They are designed so they may be adapted to any condition—made in seventy-one standard sizes and speed ranges and also special transmissions to fit all kinds of machinery.

There are no experimental features about the LEWELLEN Variable Speed Transmissions. They are built by engineers who have had more than 20 years experience in variable speed transmissions and are fully guaranteed. Their services are free and you will be under no obligation in putting speed problems up to them.

Write today for full information.

Lewellen Manufacturing Co.

Columbus, Indiana

J. S. HULME

Atlanta Trust Co. Bldg., ATLANTA, GA.

Economy Presses.

Clenzall Dye Machines.

Watson Motors.

Water Softening Systems.

Green Houses.

winding from side to side on both driving and receiving pulleys, it came off and half the room shut down. It was put on in four or five minutes and without anything being done to the belt, all the machines were again thrown on and again off came the belt. The operators were thoroughly mad, piece work and the day's complement was their aim. Nobody seemed in charge that knew anything about why the belt slipped. The second time it held and there was a little sense in the way the machines went on.

"Do not let us fail to learn that when a belt does not track and when the production is down, there may be something besides the tight fiddle string belt to stop the trouble. Leather will do so much, transmit so much load and secure regular results, but if not our experience should be used to find out 'Why it does not!'"

The following suggestions were then adopted: Each foreman to make a list of belts that are either causing stoppage from stretching or breakage and report them at once.

2. Any single belt that seems to lag in driving when secured by lacing or hooks, to be replaced by a cemented drive of light double.

3. All belts in any room to be listed, for lengths, widths and type. This list to be complete and any new belts required charged against the drive where applied. The date to be entered and thus a complete history of each belt in the room be kept.

4. The ordering of belts that show need of renewal to be made at least a week before they expect to apply them. The length, measured by a steel tape, to be taken and sufficient length be unrolled from the roll of belt to make more than the length. Sufficient length to cut to be secured to the floor, the belt thus measured brought taut and the clamps used on the free end to take gradually the proper amount of stretch from this length. By taking at least 36 hours' time and by gradually tightening such a belt, the need of taking up after applying to the drive will in almost every case be made unnecessary. Then it can be cut at the exact length allowing for the suitable laps.

5. Where drives seem overloaded, tests must be made by the engineering force to determine whether the width in use is correct for these drives. These tests to be made regularly on the main drives in each department.

A. H. G. (Conn.)

Show This to Your Wife.

A market for cotton goods at a price with a profit is probably the uppermost desire of every cotton manufacturer at present, and the farmer also wants to be able to dispose of his cotton at a price commensurate with the cost of its production at least.

When there comes an appreciably increased demand for cotton goods, making an outlet for the product of the mill, this will aid the manufacturer, and, in turn, the grower, by supplying a market for them both, and should also lend stability to the markets.

It is to hasten the coming of this condition, and thereby quicken the return of prosperity to the South, that the Lancaster League of Women Voters of Lancaster, S. C., have instituted an effort to start a publicity campaign, through the medium of all women's organizations, newspapers and magazines, the pulpit, schools and colleges, for a movement to pledge women to wear cotton dresses and use cotton goods.

Mrs. F. Gordon Cobb, wife of the general superintendent of the Lancaster Cotton Mills Company, is president of the league, and this movement has been started in the hope that all the federated women's clubs and other institutions will take it up. Considerable interest has been manifested at Dallas, Texas, and other points, to begin an organized effort in this connection, and other cities in the cotton growing and manufacturing sections are following the lead of the Lancaster women in this movement.

The plan has received the approbation of J. S. Wannamaker, president of the American Cotton Association, a cotton growers' organization, who states it as his belief that a movement for the use of cotton goods should help to reestablish confidence and that the South should back up such a movement.

To accomplish the best results, the cooperation of every woman is needed. Cotton goods are selling at extremely low prices over the present-day retail counter, and concerted effort on the part of every woman interested—directly or indirectly—in the manufacturing or producing of cotton would do much toward effecting quick results.

Soap.

(*Continued from page* 503.)

The "titer" of a fat is the temperature at which its fatty acids solidify, and is an important point in judging of the value of a grease for soap making, since the properties of the resulting soap vary directly with this factor, variation in the titer of successive deliveries will generally mean unevenness both of the grease and of the soap. Generally speaking, the lower the titer the better the soap; for instance, the titer of olive oil is 21 degrees C; cocoanut oil, 22-23 degrees C.; cottonseed oil, 33-35 degrees C.; tallow, 40-45 degrees C.; and olein, 4-10 degrees C.

Analysis of Soap (Tests, Etc.)

The normal ingredients of soap, the fatty matter and alkali, are determined as follows: Take 100 grains of the sample, dissolve in hot water (avoiding excess) in a small and very light glass beaker. Add hydrochloric acid in slight excess, and set the glass aside until the oils and fats congeal into a cake on the surface. This crust is then carefully pierced with a needle, the liquid poured off and the beaker weighed. After deducting the tare, this gives the amount of fatty matter.

Some analysts put along with the soap a weighed quantity—say, 100 grains—of pure white wax. The decomposition is managed, as in the former case, the cake of fatty matter and wax is taken out of the beaker and weighed. The weight, after the deduction of 100 grains for the wax added, shows the amount of oil or fat. This latter process is preferable for soaps containing a large amount of oil; or of any fat that congeals only at very low temperature.

When testing soap the fatty acids should never fall below 62 per cent, or 60 if reckoned as anhydrides. A good soap will generally contain from 63 to 64 per cent. Other things being equal, the amount of work which a soap will do depends directly upon the percentage of fatty acids which it contains. Contracts should always specify a

minimum of 62 per cent. The nature of the fatty acids will, of course, vary with the oil from which they are made. For cotton goods they should be of light color and should be free from rosin acids. The titer will show the kind and source of the oil used.

The amount of alkali in a soap may be determined in the usual way as in alkalimetry. In addition to the combined alkali, soaps sometimes contain free alkali, either in the form of sodium hydrate or carbonate. Free caustic alkali denotes careless manufacture, but carbonate of soda is often purposely added, especially to cheap soaps, to which it imparts hardness. It is sometimes thought desirable to use a soap containing sodium carbonate with hard water with the idea of protecting the soap, but it is both expensive and comparatively ineffective, as sodium carbonate is quite incapable of removing magnesian hardness, which is particularly objectionable.

Water, to a certain extent, is present in soaps, hard or soft. It may, however, by dexterous management, be added even to 80 per cent though the soap all the time appears quite firm, and in such proportions must be regarded as a fraudulent admixture. To determine the amount ot water present, a known quantity, say 1,000 grains, is reduced to fine shavings, dried at a heat of 212 degrees F., and the loss noted. This method, though not absolutely accurate, is sufficient for all practical purposes.

In soft soaps, the water is from 45 to 55 per cent, in hard mottled soaps about 35 per cent, in curd soaps from 20 to 30 per cent and in fitted yellow and white soap from 40 to 60 per cent.

Sulphate and chloride of soda or potash are nearly always present in soft soaps but they do not ordinarily interfere with its quality. In hard soaps the sulphate and chloride are less commonly found. Sulphate of soda is sometimes added in order to harden soft kinds of fat and common salt is occasionally employed as an adulterant. The detection of these salts is easy. Dissolve a little of the soap in distilled water, and add pure nitric acid enough to combine with the alkali, and cause a separation of the fat, which will rise to the top. Pour off the clear liquid beneath this, and add to one portion thereof a little nitrate of baryta dissolved in pure water. If a white precipitate is formed, alkaline sulphates are present in the soap. To another portion a solution of nitrate of silver is added in like manner. If a white curdy precipitate is formed, either chloride of potassium or common salt is present. Sodium sulphate or chloride should not exceed 0.1 to 0.5 per cent. Anything in excess of 1 per cent must be regarded as an adulteration.

Soaps prepared from fatty acids will be free from glycerin but in those made from neutral oils the proportion present varies from 0.25 to 3 per cent, according to the care exercised in washing. Glycerin hinders hydrolysis and is a detriment to soap for cotton washing.

Rosin may be easily detected in yellow soaps. Dissolve some of the soap in as little boiling water as possible. Add enough hydrochloric acid to combine with the alkali, and liberate the fatty matters. Then cover up the vessel for a few minutes with a sheet of glass. On uncovering it, rosin, if present, may be easily detected in the cake of fatty substances by its smell and taste, and by the peculiar stickiness which it imparts to oils and fats with which it is mixed. Rosin is a common ingredient in all yellow soaps. In all soaps intended for the use of the dyer and calico printer, it is an objectionable impurity.

Insoluble silica and alumina starch and other insoluble adulterants can be determined by dissolving a weighed portion of the soap in alcohol and filtering, the insoluble matter which remains on the filter is dried and weighed. Starch may be detected by adding a drop of the tincture of iodine to the insoluble matter on the filter paper, and if starch be present, it will give to the mass a deep blue-black color. (See note at foot of this article.)

In some bleacheries and print works it is the practice to make soaps as required. Having regard to the plant necessary, and the question of the disposal of the by-products, such as glycerin, it is doubtful whether this procedure is economical. It is now quite easy to buy soap upon a guaranteed analysis, and competition keeps the prices to a minimum. The home manufacture of soap frequently requires a preliminary treatment of the oil with acid. This is the case with bone and similar greases, which often contain considerable quantities of lime soaps; these cause much trouble in the boiling pan. The grease is boiled in water containing hydrochloric acid and steam blown through, the liquor is drawn off and the grease then thoroughly washed until quite free of acid.

Special Note: Insoluble silica and alumina in the various shapes of China clay, powdered pumice, ground gypsum, fuller's earth, etc., and mineral soap stock, starch and talcum, barytes, etc., are often added to soaps to a considerable extent not only as adulterants, but as detergents; their action is purely mechanical, they simply cleanse by scraping or abrading the dirt and grease off the goods and of course they roughen the fiber and if used before dyeing the cloth they cause it to take the color unevenly and if used after dyeing or printing they take all the bloom off it and make it bare and dead looking. I have shown in this article how to detect this adulterant is soap, and bleachers, dyers and printers should look out for it.

[This is the last of Mr. Nanson's series of four articles on soap.]

Notes About Men You Know.

A. M. STANTON, formerly superintendent of the Tennessee Mills, Knoxville, Tenn., is now general superintendent of the Peters & Herron Co., Columbus, Ohio.

P. F. CLARK has been made overseer of carding at the Ware Shoals (S. C.) Manufacturing Co. He formerly held a similar position at the Knoxville (Tenn.) Cotton Mills.

W. J. MCDONALD, recently superintendent of the Pelham (Ga.) Division of the Consolidated Textile Corporation, has become superintendent of the Sylvan Cotton Mills, Shelbyville, Tenn.

JAS. S. BAKER, formerly located at West Point, Ga., has been appointed assistant superintendent of the Henderson (Ky.) Cotton Mills.

A. W. YOUNG, who has for some time been overseer of spinning at the Mayo Mill, Cramerton, N. C., has resigned to become superintendent of the Cleghorn Mills, Rutherfordton, N. C., succeeding J. O. Williams, who goes to the Spencer and Spindale Mills, Spindale, N. C., in a similar position. Mr. Young is succeeded at the Mayo Mill by E. C. Robinson, formerly night overseer of spinning.

KNITTING SECTION

The Attention of Manufacturers Is Invited to Our New Model K

Producing a fabric without lines, using a latch needle, permitting speed of production, the making of heavy heels and toes and perfect plaiting.

Increased width of top and a greatly pronounced loose course for looping are features of great value.

ESTABLISHED 1865

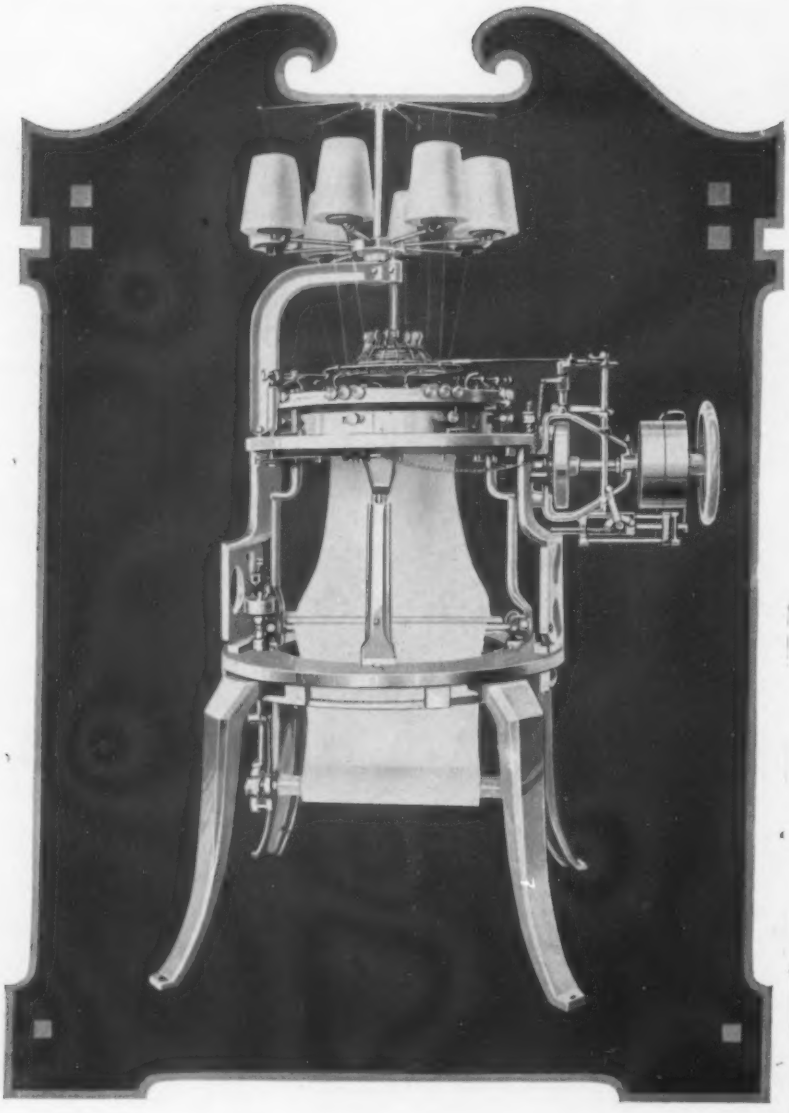
Scott & Williams

INCORPORATED

366 Broadway **New York**

Hamilton, Ont.
Main and McNab Streets

Charlotte
1006 Realty Building



WILDMAN
THE WORLD'S STANDARD

Wildman
Spring Needle Body Machine

The undeviating accuracy with which every detail is made means longest life to the machine, because of less wear on moving parts.

It means interchangeable parts that do not have to be "fitted." Jigs are used in making all such parts.

Wildman Circular Knitting Machinery through long years of use has earned an enviable reputation for dependability.

On request we will send the "Wildman Spring Needle Body Machine Instruction Book" giving detailed illustrations and descriptions of every important part of the machine.

TRADE MFG MARK

WILDMAN MFG. CO.
NORRISTOWN, PA.

Flat Combination Cams

BY G. R. MERRILL.

On machines fitted with simple flat cams, there is often a call to make some fabric or article which requires other cams in addition to those with which the machine is fitted. Of course, it is quite possible to have two sets of cams for a machine, but it is often more satisfactory to have one set of cams which are so constructed that they will make any of the stitches desired.

Plate I shows a diagrammatic sketch of the combination cams used on a large sweater machine. The back bed is equipped with one set of cams and the front bed with two. One set, working on the front, is similar to one of the sets working on the back bed and is a set of combination cams.

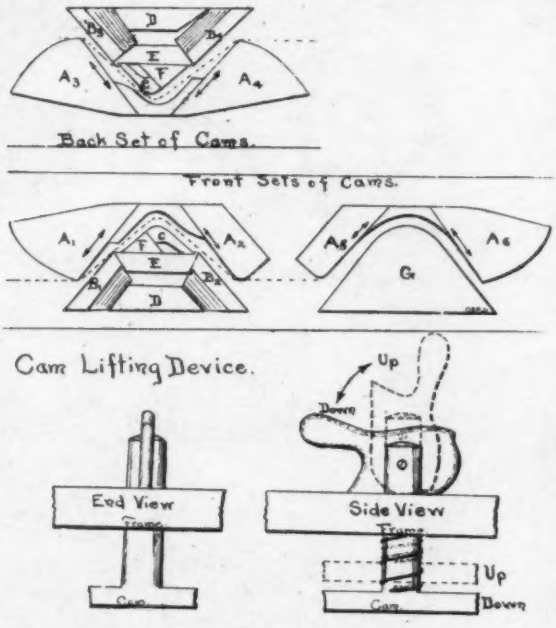


PLATE I.

The other set is composed of a simple raising cam and two stitch cams.

This simple set of cams, in conjunction with the back set, is used to make a plain fabric with selvage edges on each bed, thus leaving an opening in tubular sweater bodies on either side, for the insertion of the sleeves, without the raw edges occasioned by cutting into a tube. This requires, of course, two yarn guides, one for the cams and cloth on the back bed and one for the cams and cloth on the front bed.

The combination cams on the front and back bed are made up of stitch cams "A," raising cams "B," swing cams "C," and three kinds of blocks "D," "E" and "F".

The stitch cams "A" are adjustable vertically to give the length of stitch desired, moving in the direction shown by the arrow.

The two raising cams, "B," are blocks beveled on one side. This is shown by the shaded portion on Plate I. Either or both of these cams may be lifted away from the needle bed until they cannot strike the needle butts.

The blocks "F" which serve as raising cams under some conditions may be lifted away from the needle bed, just as the cams "B" may.

When the block "F" is drawn back the swing cam "C" may be in the position shown on Plate I, or it may be swung up until it strikes the stitch cam "A".

Blocks "D" and "E" are not movable.

The raising cam "G" of the simple set may also be lifted away from the needle bed until it does not come in contact with the needle butts.

Generally, when the combination cams are in use, this simple set of cams is not used and "G" is drawn away from the needle bed and the stitch cams "A_3" and "A_4" are set for the shortest possible stitch.

When the simple set of cams is in use, the raising cams "B" of the front combination cams are drawn back and the

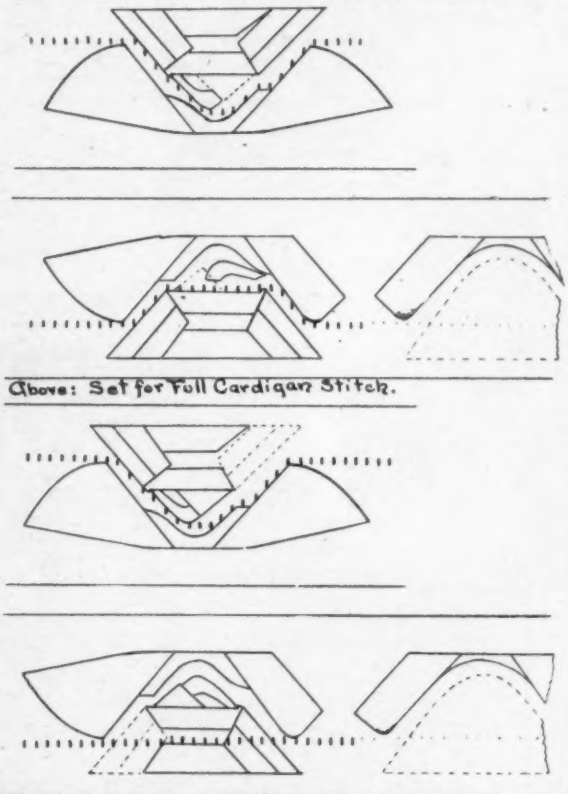


PLATE II.

stitch cams "A_1" and "A_2" are set for the shortest possible stitch.

When a plain rib stitch is desired, all of the combination cams are in the position shown in Plate I and the needle butts run in the raceway through which the dotted line is drawn. The combination cams on the back and front are both used and the simple set of cams is out of action.

To produce a half cardigan stitch, the block "F" is drawn back on one bed. This allows the needles of one bed to tuck as the cams move in one direction, because they are lifted to the level of the upper edge of block "E" and then stay at that level, lifting the swing cam "C" and

ALWAYS FIRST WITH — THE — LATEST

BANNER

ALWAYS FIRST WITH — THE — LATEST

FULL AUTOMATIC

HOSIERY MACHINES

SIMPLICITY — SPEED — PRODUCTION — QUALITY

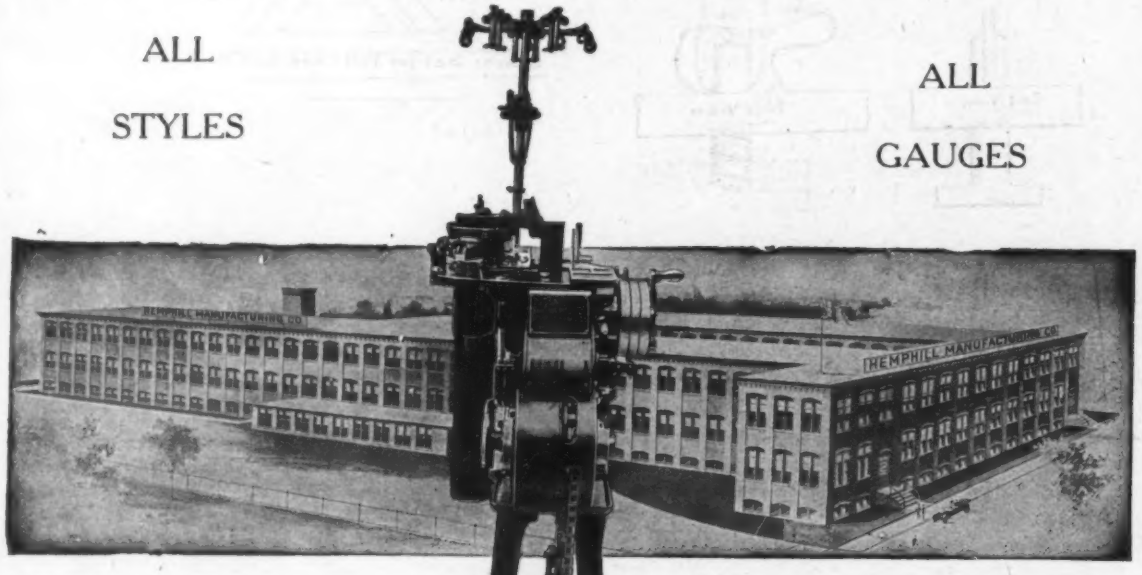
Four important things to consider when buying Hosiery Machinery.

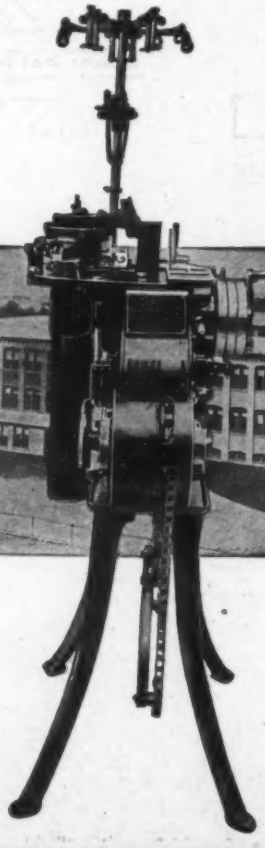
ALL PARTS ACCESSIBLE FROM FRONT OF MACHINE

Write for descriptive catalog

ALL STYLES

ALL GAUGES





HEMPHILL COMPANY

Main Office and Factory,

Pawtucket, Rhode Island.

Southern Office and Show Rooms
912-913 James Bldg., Chattanooga, Tenn.

Philadelphia Office and Showrooms, Rooms 205, 209, 210, Colonial Trust Company Bldg., 13th and Market Sts., Philadelphia, Pa.

passing under it, finally being forced down by the stitch cam "A". As the cams move in the opposite direction, the raising cam and the swing cam "C" lift the needles to the highest position, thus causing them to knit off the old loop and the tuck stitch which they hold. The opposite set of cams causes knitting, going in both directions.

To knit a full cardigan stitch, both of the blocks "F" are lifted away from the needle bed. When the cams move to the right, the back set of needles tucks and when the motion is to the left, the front set of needles tucks. See Plate II.

When making a plain stitch in a tubular form the diagonally opposite raising cams "B" are lifted up out of active position. This may mean "B_1" and "B_4" or "B_2" and "B_3". Thus, as the cams move to the left, the front set of needles is not lifted but passes through between blocks "D" and "E" and lifts the other raising cam and passes under it causing no action. At the same time, the back set of needles is lifted and caused to knit. On the return, the front set of needles knits and the back set does not. Thus a tube is built by knitting on opposite beds each course. See Plate II.

To make a plain fabric on each bed and have each a separate piece of cloth, the front combination cams are thrown out of action and the simple cams are used. Then a separate yarn guide is used for each bed and the back combination cams are set to knit all of the time. Then, as the cams move to the left, the back cams cause knitting on the back needles only, and slightly after, the simple front cams cause knitting on the front needles only. These knit when moving in each direction, thus making two plain fabrics with selvage edges.

Among the Knitting Mills.

The Ashe Mills, Inc., Rensselaer, N. Y., manufacturer of cotton cloaking and jersey cloth, is planning for the establishment of a new mill to be devoted exclusively to the manufacture of jersey sweaters. The company has leased a brick structure in Elm Street for a term of years, and will make alterations and improvements, installing new operating machinery. The company now operates a plant in the Harder Building, and it is planned to continue operations at this address in conjunction with the new mill.

H. S. Peters and associates, White Haven, Pa., have plans under way for the establishment of a mill to be devoted to the manufacture of women's and children's knit underwear. A site for the proposed mill has not been secured but it is reported that it will be located at either Jermyn, or Perkasie, Pa.

The Spatt Knitting Mills Corporation, Chicago, Ill., has filed notice of change of name to the National Sweater Mills, Inc.

The Eastlake Mfg. Co., Philadelphia, Pa., is planning to enlarge its present buildings by the addition of 8,000 square feet of floor space. Plans also include installation of new operating machinery.

Fire recently damaged the building occupied by the Standard Underwear Co., New York.

The Artistic Knitting Mills, Auburn, Pa., has completed negotiations for the purchase of an entire block, and is planning for the erection of a modern plant on the tract in the near future. Present buildings on the property will be altered and replaced to suit the company's requirements.

The Superior Knitting Mills, Philadelphia, Pa., manufacturers of cotton sweaters, are removing from their present location, 1326 North Nineteenth St., to larger quarters at Broad and Spring Garden Sts.

Altserge, Inc., New York, has been incorporated with a capital of $250,000 to manufacture textile products. The incorporators are E. Grabson, A. Greenberger and A. S. Marcuson, 70 Lenox Ave.

The Lincoln Hosiery Co., Philadelphia, Pa., is being organized to manufacture cotton hosiery and other knit goods. The company is represented by C. Stanely Hurlburt, West End Trust Bldg.

The Gray Shop, Inc., Philadelphia, Pa., has been incorporated with a capital of $400,000 to manufacture hosiery and knit goods specialties. The local incorporators are F. R. Hansell, J. Vernon Pimm and E. M. MacFarland.

The Seminole Knitting Co., Philadelphia, Pa., has leased a building at Red Hill, Pa., for the establishment of a branch plant.

The Glasson Knitting Mills, Inc., Brooklyn, N. Y., has been incorporated to manufacture knit goods specialties. The incorporators are N. Zucker, H. Rosenbaum and R. Abramson.

The Lawrence Knitting Co., formerly of Philadelphia, Pa., have removed to their new quarters in Camden, N. J.

The Ander Knitting Mills, Inc., Brooklyn, N. Y., has been incorporated with a capital of $25,000 to manufacture cotton knit goods.

The Victor-Vassar Knitting Mills, Detroit, Mich., has filed notice of an increase in its capital stock from $100,000 to $250,000.

The Knox Hosiery Mills, Cleveland, Tenn., have increased their capital from $40,000 to $60,000.

The Wilkes Hosiery Mills, Inc., North Wilkesboro, N. C., whose plant was destroyed by fire last January, have leased a building and hope to be in operation shortly. Practically the same trained help will be used, it is stated, and A. H. Andrews will be retained as superintendent of the plant.

The Greenwood (S. C.) Hosiery Mills will install machinery to manufacture lisle hosiery.

It is reported that Charles L. Cassidy contemplates the establishment of a hosiery mill at Marion, Ky.

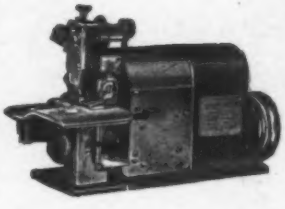
The Calton Hosiery Mills, Spartanburg, S. C., will double its plant capacity, to manufacture high grade mercerized lisle hose. J. B. McKaig is manager.

The Hall's Hosiery Mills, Statesville, N. C., manufacturers of cotton seamless hosiery, will take over the rebuilt plant of the Liberty Hosiery Mfg. Co., recently equipped with new machinery. The installation consists of 60 knitting machines, with electric drive. The capacity of the plant is about 250 dozen pairs of hosiery a day. W. F. Hall heads the company.

H. L. Coats will be present at the Philadelphia Knitting Exhibition May 2-6 inclusive to introduce the "Strongest Belt Lacing on Earth." The booth of the Flexible Steel Lacing Co. of Chicago will be in space 207 and the exhibition promises to be one of more than ordinary interest. Don't miss seeing it.

MERROWING

ESTABLISHED 1838
MAKERS OF



THE MERROW HIGH SPEED

OVERSEAMING; OVEREDGING
AND SHELL STITCH MACHINES

MERROWISE

FOR EFFICIENCY
IT MEANS

MAXIMUM PRODUCTION
MINIMUM EXPENSE
UNEXCELLED QUALITY OF WORK

THE MERROW MACHINE COMPANY

16 LAUREL ST., HARTFORD, CONN., U. S. A.

Notice
Knit Goods Manufacturers
ZETTO FINIS

Do you know the many styles cotton knit goods can be finished and the many purposes for which it can be sold.

Do you know that cotton knit goods finished by the ZETTO process alters cotton knit cloth so greatly that it can be used for purposes other than for which it was originally designed?

Do you know that cotton knit goods finished by the ZETTO process will open a new market for your knit cloth and increase your profit?

Do you know that cotton knit goods finished by the ZETTO process makes beautiful Sport Suits, Gloves, Wind-proof Automobile Coats and many other novelties?

Samples Finished Free of Charge. *Correspondence Invited.*

Cold Spring Textile Corporation

COLD SPRING-ON-THE-HUDSON, NEW YORK

Established Yesterday

The Knit Goods Market

More important to manufacturers than the condition of the knit goods market as it is reflected in conditions prevailing during April is the situation which mills may have to meet.

It is pretty well settled that dealers have no stocks of moment, but there is a question as to what extent mill accumulations of low end lines of hosiery have been absorbed and whether there remain stocks of high price yarns to be worked up into finished product.

Low as are dealers' stocks, their purchases are light and for only immediate wants. They are risking nothing to the future, expecting mills to be prepared at any time to take care of needs as they develop. The jobber refuses to carry the retailer, but wants to be carried by the mill. He would have manufacturers assume their risks, doing that which they themselves have not the courage to do.

Buyers for most of the smaller jobbing houses shop around among mills and mill offices, looking for "specials," as the housewife has been trained to do in her visits to the department stores. They go even further than the consumer-shopper. They will name a price beyond which, they say they will not go, stating some other mill has quoted such figures. Yet they appear to be not going to that "other mill," although passing by some rare bargains, frequently returning after finding their price-battering plans failed to work out.

Manufacturers have been too eager to sell; they have named prices that are a disgrace to the merchandise to which they apply. Such prices probably indicate the mill has stock which, for financial reasons, must be converted into cash. Either that, or the manufacturer himself does not have confidence in his prices. It would not be strange if he felt that way about it, for there is much to be done in the equalization of prices of raw and finished materials and a harmonizing of most retail store prices and some wage scales with conditions as they actually are.

The grower of cotton that is fetching no more than pre-war value is in no mood to pay 60 to 70 per cent more for cotton in finished textiles than it cost him six years ago.

Either cotton has got to go up or cotton products come down before there will be that peace of mind necessary to wholesome consumption.

Wheat at a dollar a bushel is not bringing the farmer as much as he put into the crop in seed, fertilizer and labor, leaving out of consideration the sweat of his own brow that entered into the various stages of production. When in the city, the wheat farmer buys bread at prices based on two-dollar wheat, and finds every other commodity correspondingly high.

The farmer's beef cattle bring him about seven per cent more than the market price in 1913. When he buys beef for his table he pays 50 per cent more than he did six years ago.

Calf skins are 20 per cent under the market value of 1913; shoes made from calf skins are from 50 to 100 per cent above.

The sheep herder can get 14 to 15 per cent more for his wool than it brought to him just before the duty was removed seven or eight years ago. To buy a suit of clothes he must sell almost twice as much wool as then.

The value of crude rubber, New York market, is from 45 to 70 per cent under 1913. One would believe, from the prices of manufactures of rubber, that the price has gone more than that much the other way.

The $10,000 house of 1913 would cost approximately $15,000 today for lumber alone, according to carefully prepared figures—and building mechanics are holding out, in most sections, for about the post-war peak wage.

Whether prices in the foregoing list of illustrations shall come down or prices of textile manufactures and of raw materials go up is a question on which hinges, to a large extent, the uncertainty which clouds the market of the future. Prices of knitted goods are too low in contrast. Buyers admit this, but manifest a shaky feeling when it comes to making commitments for supplies beyond a few weeks.

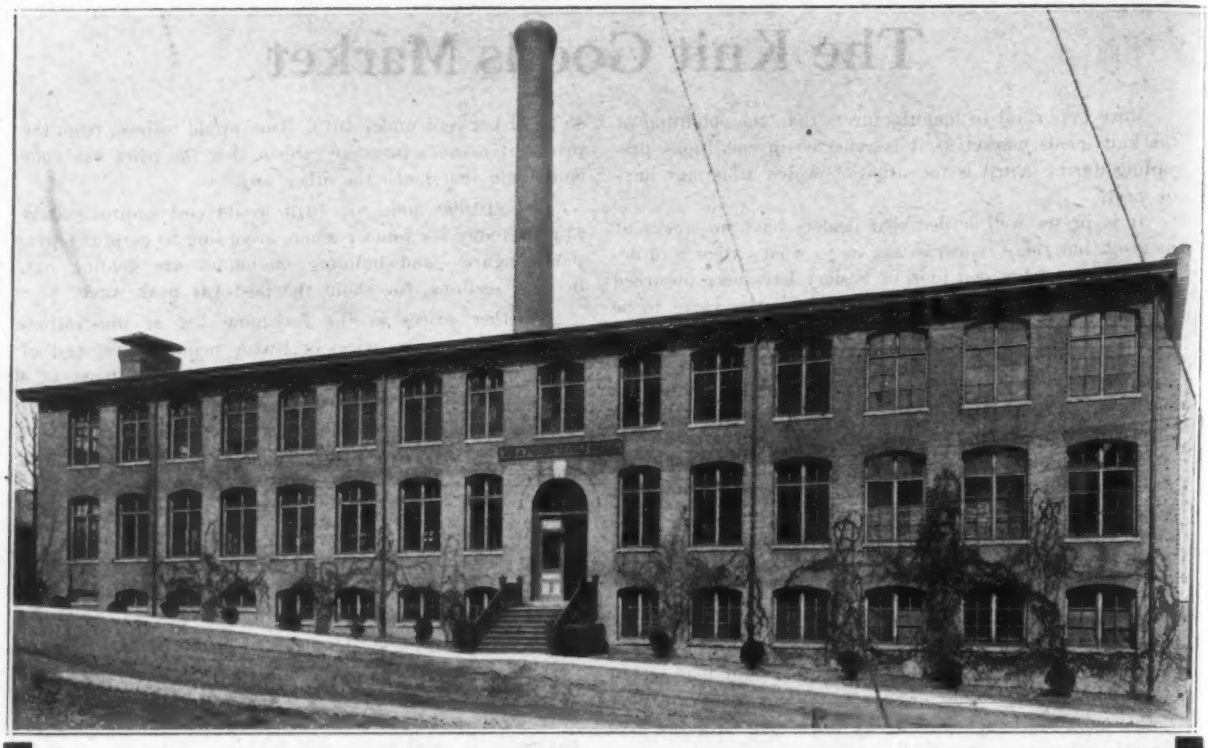
Low prices will sell hosiery. That is being proved in the experience of the Durham (N. C.) Hosiery mills, which have gone right to the core of things in getting after business. The Durham company not only has named prices which many manufacturers contend cannot show a profit—but it is guaranteeing its prices against its declines until October, provided buyers select Durham branding. If they have goods put up under brands other than Durham the guarantee is good only until delivery. Then the Durham mills allow freight charges to destination, and give buyers the benefit of a 3½ per cent discount on invoices settled for in 15 days. The Durham is operating its knitting departments in 13 mills about 70 per cent, has two mills under construction, and is running a finishing plant overtime, for getting out goods in the gray which accumulated during the long period when business was at a standstill, waiting for the prices which the mills named a few weeks ago.

The Durham, it is learned at the company's New York office, quotes 72½ cents a dozen for 24-ounce 84-needle half hose, this subject to 3½ per cent discount in 15 days. It would seem absolutely safe to guarantee such a price several years. Another mill making this type of sock asks 95 cents. However, the stocking is not moving, at even the Durham price. The market is not ripe for 84 needle goods.

The Durham price for 144 needle cotton socks is 80 cents, 60 days net. This is about what some other mills are getting, one, however, having sold three months ahead at five cents higher. A very low Durham price is 77½ cents for cut toe 176 needle half-hose. Similar socks are bringing from 7½ to 15 cents more to other mills.

The big North Carolina mill has marked an artificial silk half hose $4.10 a dozen; silk, $6 for plain and $6.75 for mock seam; women's full fashioned $17.25. These prices are subject to a resale discount of 20 per cent and a 3½ per cent 15 days' trade discount, with freight allowance.

The Durham mill is putting out a mock seam 12-thread silk stocking for women at $7 a dozen net. This should prove an interesting number at this time, when full fashioned silks are so scarce that jobbers are willing to pay a premium for preferred deliveries. This is one of a few divisions of the knit goods market in which the seller is in control. The other extreme is found in mills sacri-



The A. French Textile School

of the

GEORGIA SCHOOL OF TECHNOLOGY

"A Technical School with a National Reputation"

The A. French Textile School is equipped with modern cotton mill machinery for making various lines of fabrics from the finest goods to heavy ducks and tire fabrics. Courses are given in cotton manufacturing, dyeing and finishing, as well as one in knitting, which has been recently added.

There are two courses given—a special certificate course of two years, and a four-year course leading to the degree of B.S. in Textile Engineering.

Georgia School of Technology also offers complete courses in Mechanical, Electrical, Civil, and Chemical Engineering, Architecture, Commerce and Industrial Education.

For information address

K. G. Matheson, President, Atlanta, Ga.

fieing their product and apparently willing to sacrifice still more to prevent their machinery deteriorating from rust.

Several of the larger full fashioned mills are sold up to July on women's stockings, the situation as to half hose being considerably easier. Seamless silks are accepted by most men, but even these are not moving in strong volume, relatively, when women's stockings in silk are considered.

It is found that Durham low prices are bringing buyers to market willing, after being put to the test, to pay more. They've got to buy, lest competitors steal a march on them in the matter of ready stock. Retailers want hosiery right away—bought today and delivered tomorrow. When the jobber cannot supply them they turn to the direct-to-retailer mills, and these have been taking on a considerable number of new accounts since the jobbers went on strike against carrying stocks.

A southern mill selling the retail trade has brought out a stocking that is unique for length. The leg measures 30 inches from sole to top, and 25 inches of this extraordinary length are of silk. The stocking is of the mock seam type and costs retailers approximately $13.50 a dozen. Any well made seamless stocking for women ought to find favor while the shortage of full fashioned silks continues. There is danger, of course, that production will be carried so far for meeting a prospective demand that eventually there will be another surplus of such goods.

It might appear expedient that the manufacture of mercerized hosiery be discontinued for a time. Prices show such a wide range that it must be assumed either some lines are too high or others too low. The latter probably is true, and buyers are taking advantage of every opening for obtaining mercerized goods at prices that show a loss for manufacturers.

A few manufacturers anticipate some business in drop stitch mercerized stockings for women, and one bought heavily of mercerized 60s two-ply yarn for making such a stocking. It is understood he paid 95 cents a pound for the yarn. An eastern mercerizer quoted one dollar, and a mercerizer in the middle states named $1.03. A very high grade southern mercerized 60s two-ply is offered at a dollar, and small quantities have been bought in the Philadelphia market for hosiery and underwear.

Misses coarse gauge ribbed stockings are variously priced, at anywhere between 90 cents and a dollar. A very good stocking of southern make is held for the latter figure. A similar stocking from another southern mill is to be had at five cents less.

It is not fair to mill or merchandise to speak in print of prices of misses' fine gauge carded, combed and mercerized ribs. In each type there is a range of 25 cents between high and low, and it develops that as much business at the higher figure is being booked as at the lower, according to mill sales managers.

Combed half hose is an enigma. One mill is getting from $1.75 to $1.85 a dozen, depending on quantity and the desirability of an account, while jobbers have been known in the last two weeks to pass by single combed socks at $1.25. A buyer offered $1.15, a price which he said had been named by a manufacturer. His offer was not accepted, neither was his reported "other mill" price accompanied by an affidavit.

Infants socks, from the viewpoint of the manufacturer, is one of the favored lines. A number of mills are sold ahead for three months and will fall in arrears with deliveries. Several would employ additional help, but it seems not available in the sections where wanted.

While few hosiery mills are booking business in satisfactory volume, it would appear there are some that are selling more goods than generally is suspected. In a Philadelphia newspaper of quite recent date there appeared advertisements of eight hosiery manufacturers for help, in each of several departments. Loopers and toppers were most in demand. This does not imply that there are no idle hosiery mill operatives. There are many looking for employment. Some are viewed as undesirable in the present labor situation; some knitters are on strike for the closed shop and against a slight reduction from the top wage of 1920. But much of the hosiery mill help, which was the first to feel the effect of the stoppage of industry, has found employment in other lines of endeavor. Some of it will not work under existing wage scales—that is, they will not do so while they receive support from their union or can grovel along on savings. This attitude is a factor in unnecessarily high cost and is working to the advantage of those who are disposed to grant a day's work for a day's pay. There can come a temporary shortage of some lines of hosiery through the indifference of operatives. In fact, there is a possibility that women's 240 needle mercerized hosiery will not be plentiful for several mills have discontinued making it, turning their machinery over to the production of seamless silks.

The hosiery market, it will be seen, is punctuated with pitfalls. A scarcity today may prove a surplus tomorrow, and there is a possibility that present accumulations may be absorbed almost over night and the market caught bare.

The old story of a manufacturer who continued making up goods after his competitors had closed their mills and one day found his mill the only one that could meet an unexpected demand is being revived, apparently in the interests of distributors, who would prefer that mills go on making, even though they were not selling. The story is matched by the isolated instance of the prospector who "struck it rich". Hordes followed where he dared tread and came out broke. That is what probably will happen to the hosiery manufacturer who permits production to measurably exceed demand. If a manufacturer feel that his judgment is better than that of the jobber who is unwilling to risk an investment in merchandise he should proceed accordingly. If he confess that he knows no more of the future than he credits the jobber with knowing, he will operate his mill in proportion as the jobber buys his product. Deflation has not been wholly accomplished. It can be completed with safety by following an absolutely conservative policy. Any other will be no less a gamble than a wager on the turn of a card or confidence that any one horse in a string will win.

A commission man showed seven hosiery orders all received in a day's mail. They came from eleven cities, and did not average two cases. This is a fair illustration of the extent to which jobbers are buying—on a basis on which few mills would care to do business continuously, at the present level of prices. The business is at a stage where, it appears, a number of mills will have to give up the struggle. This may be said notwithstanding there is actual activity in some lines and among some mills. The bright spots are the exception, and they are not being increased in number by export conditions. Cotton hosiery exports for February, the latest month for which statistics are

available, fell off to 221,338 dozen pairs, valued at $724,946, the lowest since this country began selling hosiery abroad as a result of the world war. Last year shipments abroad of 900,000 dozens a month were not uncommon, and for a while they exceeded one million dozens. Artificial silk hosiery exports in February totaled only 45,382 dozens, which was slightly more than for January, but far under the average for the last two years. In July of 1920 the exports of hosiery to Cuba alone were more than one-half the entire exports for February last, when Cuba took less than 10,000 dozens.

There will be improvement in the hosiery situation, but it will not be sufficient for some time to keep 75 per cent of the knitting machinery going.

That jobbers may overstay the hosiery market and face a shortage due to curtailed production is not improbable. They were caught short of light underwear, which just now is very much in demand. Mills which, when they ceased operations during the period when the slump was scratching bottom, had accumulations of stock that jobbers would not buy, seem to have gotten rid of the surplus and now are having trouble completing deliveries. This may be referred to by buyers as showing that the mills might have profited had they operated during the winter when buying was not thought of. The contrary is true. Had there accumulated as much underwear as of hosiery, the former would not be bringing replacement cost prices. As it is, mills are coming through without more than a scratch. Some have made slight price advances since the opening in January, and there is an absolute scarcity of a few lines, conspicuous among which are women's cheap gauze vests.

Spring underwear, more particularly women's garments, is being sold right up to mill capacity, and not a few mills are operating overtime. This condition, similar to that in full fashioned silk hosiery, is proving a strong factor in sustaining the knit goods market. Jobbers having learned from recent experience that even in a period of depression there may develop a shortage at a time when merchandise must be had, will be less inclined to defer purchases of heavy weight underwear, which has been selling for winter since the first of April.

Immediately following the delayed opening there was a repetition of the 1920 backing and sparring for lower prices. For a few days rumors of manufacturers reducing their prices were current. Most of these were exploded, and, sooner than expected, in the circumstances, mill heads buckled down to the determination to either sell at their very low prices or not sell at all.

The principle hitch between mill and jobber was on 16 pound cotton ribbed union suits and 11 pound ribbed shirts and drawers. Jobbers wanted the standard lines at the prices named for sub-standard. While they were jockeying, two of the southern mills began doing business, and by the end of April had sold most of their customers approximately 50 per cent of their purchases of last year. Others quickly caught up in volume of sales, and by the end of April it looked as though the southern mills would sell the entire production of the short season.

So soon as it became apparent the small to medium jobber was operating in a modest way, some of the "big fellows" came to market and began talking matters over with mill executives. There were heart-to-heart talks in more than one mill office, ending usually in the buyer seeing the light and committing himself for a fair proportion of his prospective requirements. Thus the fall underwear campaign was gotten in full swing, but it cannot be said transactions promise a large volume business for the year. Even though all the heavy weight underwear machinery, wool and cotton, were operated to capacity for the remaining months of the production season, the total output would be less than 75 per cent of a possible. In view of the low prices and the heavy overhead imposed by the methods pursued by distributors, manufacturers' returns for the year cannot be large.

To talk of a possible shortage in fall underwear might seem like a stretch of the imagination. Such a condition during the late fall and early winter need not depend on imagination. It developed in full fashioned silk hosiery, in infants socks, and in spring underwear, and it will be repeated before December unless dealers' purchases are sufficient to encourage mills to push production. Manufacturers will be disposed to profit by the experience of mills in the lines mentioned, rather than undertake to keep machinery running as an accommodation.

Few underwear manufacturers, it is believed, are guaranteeing prices against declines, and most of them are stoutly resisting the jobber propaganda for longer terms. Recently there came to a number of mills a letter from a jobbing house in the northwest asking for terms of 2/10/60 extra. The letters were identical and were signed by the buyer, who stated he was instructed by his superiors to give preference to mills granting such terms—giving jobbers a discount of two per cent at the expiration of 70 days from date of invoice. It was suspected this house had been selected to feel mills out on the subject and report the result to the jobbing trade. So far as can be ascertained, manufacturers replied to the effect they could not acquiesce in the buyer's proposal. It was shown that mills must pay for yarn on the 10th of the month following delivery, that wages are paid weekly or bi-weekly, and that to sell their product for cash in 70 days, after having spent two to three months in filling orders, would necessitate considerably increased capital. One manufacturer suggested to the buyer that his house provide the additional capital; that if mills were compelled to wait so long for their money they would be warranted in selling the retail trade direct. Fear of retailers going to mills in increasing numbers is serving to command from jobbers more consideration than ordinarily would be accorded manufacturers.

Direct-to-retailer underwear mills went out with their lines in the third week in April. They were ready with samples and prices in March, but at that time were more interested in spring underwear than pushing heavy weight lines. For the first time in a long while orders for underwear were being turned down—not because of actual depletion of stocks, but for the reason deliveries specified could not be made.

Dealers in sweater coats seem destined for an experience not unlike that in light weight underwear. They are buying only niggardly for Fall, and the season is fast waning. It started late, to begin with, and most manufacturers are taking no chance on high price wool yarns and silk. Some few jobbers are buying sweaters, in a small way, but the aggregate of the transactions thus far has been insignificant. By June, it is expected, a very strong demand for sweaters will have developed, and from then on to the end of the year mills should be crowded with business, as

they now are with orders for sweaters for spring and summer. Small quantity sales are keeping factories steadily employed, and of the more desirable numbers of silk, artificial silk and light worsted sweaters there will be no surplus. More of outdoor life; more fashion parades at the resorts are making a healthy market for nifty sweater coats and summer scarfs and mufflers.

Considering world conditions, the knit goods domestic market may be described as strong. Mills with winning numbers in hosiery and sweaters will have a good season's business. Those that miss their guess as to style demand will feel the market has gone to the dogs. Underwear for the year will show a big six-months' volume of business, and that seems to about all that most mills will be able to take care of in the remaining months.

A New Outlet for Hosiery.

Silk hosiery is becoming a part of the stock in trade of meat stores and produce markets, after having been introduced in a number of cigar stores as a side line at prices which have proved attractive to the buying public. A prominent hosieryman recently returned from San Francisco relates that it was mentioned to him incidentally that Lesser Brothers' market in that city was selling considerable quantities of hosiery. He was disposed to discredit the statement, but made a personal investigation, with the result he found the meat market was fairly well stocked with Hole-proof and Bear Brand, two well known lines of stockings, for which the establishment was having a good sale. It was stated the hosiery had been placed on sale through the jobbing house of Gerson & Breyer, San Francisco.

Both hosiery and light underwear are displayed on a poultry and produce stand in a Reading, Pa., general market. A manufacturer of silk hosiery in the East recently received a good sized order from a meat market in Denver, Colo., for silk stockings, and was inclined to treat the order as a joke. Correspondence with the western representative disclosed that the meat store was dealing in hosiery on a scale that promised to open up a profitable business with the mill, and the order was filled.

In a cut-price cigar store in Philadelphia a distress lot of hosiery that had been picked up was disposed of in a short time, and the management is in the market for more. In the same store, neckwear selling regularly at one dollar in a chain of haberdasheries was a strong seller at 50 cents. This store now has added candies and is planning to go more extensively into the sale of hosiery and neckwear.

Whether it was complaint of high prices in haberdasheries that gave to meat and cigar dealers the cue for going outside their regular lines is not stated, but since it has been found knitted articles can be sold elsewhere than in stores hitherto handling them there is understood to be a movement among several manufacturers to put their goods on sale in stores of whatever description that might handle them profitably. It is felt a new outlet has been provided for a lot of surplus stocks which have prevented mills obtaining value prices.

Idleness is the dead sea that swallows all virtues. Be active in business that temptation may miss her aim; the bird that sits is easily shot.

Price Guarantees Unsatisfactory.

The guaranteeing of prices against sellers' declines, a practice in which buyers were being indulged while prices were wavering under the assumption there were large surplus stocks that might at any time smash the market, is reported by knitting manufacturers as being pretty generally abandoned. It now is confined principally to mills making branded lines or selling the retail trade under nationally advertised brands. In the underwear trade the number of mills guaranteeing prices to jobbers is reported negligible, and these are understood to be getting away from the practice since it is being commonly accepted that manufacturers' prices are as low as they possibly can go for fall and winter. It is pointed out that no dealer is asking for price protection on full fashioned silk hosiery, being content, on the contrary, to pay a premium for stipulated delivery. Later demand for sweaters and heavy weight underwear, it is held, will place manufacturers of these lines in the same position as that now enjoyed by full fashioned hosiery mills.

There may have been some excuse for protecting prices of branded lines handled by a large number of retailers, it is admitted in some quarters, although in others it is questioned whether there ever existed a valid reason why even branded lines should have been sold under guaranteed prices. "We did it," said the executive of a large mill selling branded underwear to jobbers, "but have discontinued it. We regard the guarantee as establishing the seller's confidence in his price. On the other hand, the buyer who asks for it shows lack of confidence. What is needed is confidence, and that will be restored the quicker by forcing it on buyers, if necessary, by declining to extend the guarantee."

"Did you ever hear of the government guaranteeing the price on the bonds which we all bought during the war," asked the mill executive. "We bought pretty heavily, and when we needed the money invested in bonds and had to sell them because the banks told us the federal reserve board was discountenancing loans, we suffered a loss. Of course that can be charged to the war, and we do not complain, but when there can be no guarantee on a government bond I fail to see the justification for it on the prices of manufactured commodities, particularly so long as the cotton grower, wool producer and wheat farmer can have no guarantee that they ever will get 50 cents from a crop for the dollar invested in the seeding and fertilizer. A man buys a suit of clothes today and tomorrow find that had he waited a day longer he could have saved a few dollars. He had no guarantee the price would not decline. In my judgment it is up to the buyer, jobber, retailer or consumer to bear the risk of his purchase, precisely what he must do when he buys bonds or other securities, and what the manufacturer cannot escape when he buys machinery and yarn."

Price guaranteeing, it is found by an adjustment agency, is a source of stubborn controversy between seller and buyer. It is shown that a merchant who has been accorded price protection will resist payment of his account if he find allowances under a guarantee has been made to others. While one merchant might be entitled to a rebate under the guarantee another would not, one having bought before a decline went into effect; the other after the change had been announced. It makes no difference to the latter, however, this agency says, for so long as it can be shown that A

was granted an allowance B insists on it, although, under the guarantee at the time he made his purchase, it does not apply to him. Settlement of a number of invoices is being held up, it is shown, over a dispute as to whether the buyer was or was not entitled to a rebate under price protection as extended to some other buyer under entirely different circumstances.

"The best thing manufacturers, the first in line after the producers of raw materials, can do for themselves and in the interests of the knitting trade at large, is to take a firm stand against the guaranteeing of prices," says the executive of a large hosiery mill.

The Yarn Market.

The Philadelphia cotton yarn market for the past month went through a further drought of business and some price reductions—experiencing somewhat of a come-back, or at least a steadying, toward the latter part of the period.

Insulating yarns were reported as receiving some attention in the first week, while the total volume of business on the list in general continued to diminish. It seemed that the cotton goods manufacturers were through with guessing at the market and had decided to sit tight in the boat and await the booking of orders—actual business—for their product before tying up any money or credits in yarns or any other materials they might not need for a period of months.

In this period, southern carded weaving and knitting yarns settled to the extent of one cent a pound on reported sales. It had been previously figured that southern carded warps, 20s/2, could not sell at less than 25 cents a pound to make a profit—with cotton selling as low as 10 cents. However, these were offered for 24 cents, and 20s single and ply skeins and 20s carded cones were also on the market at this figure. A year ago, southern warps, 20s/2, were selling at $1.00 a pound. These yarns sold at 20 to 25 cents a pound in the latter part of 1915, and these, and the list in general, it was estimated, were selling the latter part of March at the lowest levels in five years.

Furthermore, it is interesting to note the extent to which the list receded below the low levels of early January of this year, which followed an eight-months' slump. The coarser numbers of carded yarns, it was shown, went from two to four cents below these previous low marks, while the finer counts were under them by a margin of five to seven cents.

The fact of this larger decrease in rates in the finer grades was attributed to the recent wage reductions in the mills spinning the yarns. The coarser yarns, in the manufacture of which less labor is required, merely followed the trend of raw cotton prices in their falling off in values, it was explained. On the other hand, the finer grades required more labor in their manufacture, and consequently more was taken off the cost of manufacture by the wage reductions.

Also, the continued weakness in price was no doubt affected by the accumulation of surplus stocks in certain counts on the market. It is reported that some such stocks were put in the market as consignments by spinners using the yarn as collateral for money borrowed from Philadelphia commission houses, and it is further stated that on some of these yarns the spinners received advances amounting to the bare cost of the cotton.

There were indications, however, that a stop would be put to this arrangement by the Philadelphia people as some houses which had been receiving consignments of this character and making advances thereon turned down yarn offers made on this basis. Their reason for doing this—whether they had no finances available for this purpose or whether they realized an already too crowded market existed—was not reported, but a result of their action was to relieve the market of handling extra shipments for which no immediate outlet was in sight.

Distressed selling was blamed with much of the demoralization of the market; the desire and attempts of certain sellers to book business regardless of price. Eastern spinners, who seemed to be more strongly financed, did not attempt competition with southern prices and refused business unless the prices at least covered cost of production or more.

Combed yarns were not as greatly affected as were the carded groups, and held relatively firm though they did drop considerably from the levels of a month or so previous. Enough business was placed to keep spinners on these yarns on a fair operating basis, though much machinery was idle.

The middle of the month, as reported here, saw cotton yarn prices steady themselves somewhat, from a few more inquiries and orders and an advance in raw cotton rates. While no yarn price increases were reported, the list as a whole held practically the same level for a period of a week or more—for the first time in quite a good while.

Combed yarn inquiry showed some improvement, as a possible result of an absence of unsold spots of this variety. The weavers and braiders were the chief takers for the combed yarns sold.

Carded numbers were reported to be weakened still further by the presence on the market of unsold spot stocks of these yarns. When these stocks are cleaned up there will doubtless be an element of strength in the situation.

The coming of April brought considerable hope and confidence in a better market for that month. It seemed that yarn rates were again showing a disposition to steady themselves in a noticeable manner, and more stable price conditions during April were looked for. The market during the previous month had been under the pressure of overproduction, which now seemed to show signs of abatement. Also, it was pointed out, surplus stocks in this market and in the South should diminish—reports showed further curtailment of production—and reports were that the selling of distress yarns by second hands was on the wane. All of which should remove considerable pressure from yarn prices.

Recent Philadelphia quotations follow:

Southern Single Skeins.

4s to 8s	20 @20½	10s	21 @21½
12s	21½ @22	14s	22 @22½
16s	22½ @23	20s	23½ @24
24s	24½	26s	25 @25½
30s	26 @27½		

Southern Single Warps.

8s	20½ @21	10s	21 @21½
12s	21½ @22	14s	22 @22½
16s	23 @23½	20s	23½ @24½
26s	26 @26½	30s	27 @27½
40s	35 @37½		

Carpet and Upholstery Yarns in Skeins.

8s and 9s 3-4 slack	21½
8-3-4 tinged tubes	16 @17
8-3-4 hard white warp twist	20½ @21
8-3-4 hard twist waste	15 @15½

Southern Two-Ply Skeins.

8s	20½	10s	21 @21½
12s	21½ @22	14s	22 @22½
16s	22½ @23	20s	23 @24
24s	25	26s	25 @25½
30s	26 @27½	40s	36 @39

Southern Two-Ply Warps.

8s	21	10s	21½@22
12s	22 @22½	14s	22 @22½
16s	22½@23	20s	23 @24
24s	25½	26s	25½@26
30s	27 @28	40s	36½@39½

Southern Two-Ply Combed Peeler Skeins and Warps.

20s	46	24s	48
30s	50	40s	55 @57
50s	60 @64	60s	70 @71
70s	80 @85	80s	95 @1.00

Southern Frame Spun Carded Yarn on Cones.

8s	21 @21½	10s	22 @22½
12s	22½@23	14s	22½@23
16s	22½@23½	18s	23 @24
20s	23 @24	22s	23½@24
24s	24½@25	26s	25 @25½
30s	26 @27	40s	35 @39
30s double carded			31 @32
30s tying-in			26 @26½

Northern Mule Spun Carded Yarn Cones.

10s	26	12s	27
14s	28	16s	29
18s	30	20s	31
24s	33	26s	34
30s	36	40s	43

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	41	12s	42
14s	43	16s	44
18s	45	20s	46
22s	47	26s	51
28s	52	30s	53
36s	57	38s	59
40s	60		

Sidelights on the Labor Situation.

The claim is made by Philadelphia employers that they have virtually freed themselves from domination by the organized hosiery boarders, Hosiery Workers Local 696, and the Dyers' and Mercerizers' Union Local 702. The suit of the Master Dyers' Association for an injunction to restrain the striking dyers and mercerizers from interfering with operations at the plants of the members still is pending, but in the meantime, it is stated, the master dyers are operating 60 hours a day, as non-union shops, which is regarded a step in advance of what is known as the "open shop".

For some time the Radmoor group of hosiery mills has been doing commercial boarding for a number of manufacturers who were having trouble with the organized boarders. According to the Radmoor management, girl boarders, using metal hosiery forms, are turning off from 60 to 70 dozen pairs a day, whereas the union limit was 35 dozens. The girls are paid nine cents a dozen and therefore are earning an average of about $32 a week of 5½ days. The union scale is 20½ cents a dozen, under which boarders were able to earn about $39 a week. The mills doing commercial boarding receive 15 cents a dozen from manufacturers using their service, the difference of six cents between the charge for the work and what is paid the girl boarders being absorbed in the cost of steam, overhead, etc., after providing for a slight margin of profit. The Radmoor group of mills therefore has reduced the boarding cost of the production of these mills while reducing the boarding cost to other mills. It is pointed out that only by the establishing of such economies can the cost of hosiery be brought down to a level at which prices to the trade can be made satisfactory. In view of the better situation in the dyeing plants it is expected there will be a corresponding reduction in the cost of dyeing.

One of the grievances of hosiery mill heads against the union is that, while previous to the war every knitter who was capable would operate two machines, with two apprentices, it is the union idea that a knitter shall operate but one machine, and do away with the apprentice system except insofar as it might be permitted by the union. Under this arrangement, it is held, an alien knitter might come into this country, get a job and hold it, if he became a member of the union, whereas an American boy virtually might be denied permission to become an apprentice.

The strike in the Philadelphia full fashioned hosiery mills entered on its 18th week on May 1 and, according to employers, is to be fought to a finish. It is asserted that those who return to take their old jobs will have to do so as individuals, that, in view of what is said to be successful resistance of the demands of the Hosiery Workers Local, there will be no bargaining with unions.

A western mill, which until some months ago was operated as a union mill, still is idle as a result of a strike. A representative of the company says the mill will remain idle until it can resume as an open shop.

The Purchasing Power of a Day's Work.

With the recent reductions in the wages of cotton mill operatives, it was perhaps to be expected that many of these workers, who do not stop to study or to analyze the question, would consider the fact only from the viewpoint that their pay envelopes would not be as large as before and hence their purchasing power would be diminished in just the same proportion as the amount of money taken from their wages. Many, perhaps, have become disgruntled or dissatisfied and have felt that they have been mistreated by the mill and are, maybe, reverting to the practice of "spite work" to lower production, or do other things which really reflect detrimentally to their own good and welfare—all this without considering that in many other instances the process of readjustment has left its mark; that in these times dollars do not represent nor can be made the basis for determining the value of wages; that the purchasing power of a day's work represents one's wages in the last analysis; and that, by proof, the purchasing power of a day's work has gone up in the last twelve months instead of descending, as the worker no doubt believes it has, considering that his wages have been cut.

It is interesting, therefore, to note that, in an effort to refute this wrong belief on the part of the operatives, F. Gordon Cobb, general superintendent of the Lancaster, S. C.) Cotton Mills Company, in a recent talk before the operatives of those mills, pointed out the fact mentioned in the preceding paragraph, and his presentation of the facts as they are no doubt set any mistaken workers to thinking aright for themselves.

Mr. Cobb presented his arguments in a clear and understandable manner, and used local illustrations and actual facts which could be easily understood by the operatives and which were of a more or less personal interest to them. Among the simple, forceful illustrations used by Mr. Cobb to bring out his point was the following:

"We will say that last year there was a farmer living in the back-woods near Lancaster who knew nothing about the wages being paid in the mill nor the price of cloth. But after laying by his crop he came to the mill and said he wanted some cloth. He had no money, but as he had once worked in the mill as a section man, he wanted to work a day and be paid off in cloth. He was put to work on a job paying $4.00 a day at that time. After working the day and on being asked what kind of cloth he wanted, he said 'some of that 80 x 80'. At that time 80 x 80 was selling for 34 cents a yard, so he was given 11¾ yards of cloth in payment for his work.

"Now suppose he should come back today and say, 'I'm

Do you want your mill to turn out the best material wth the lowest percentage of waste and seconds?

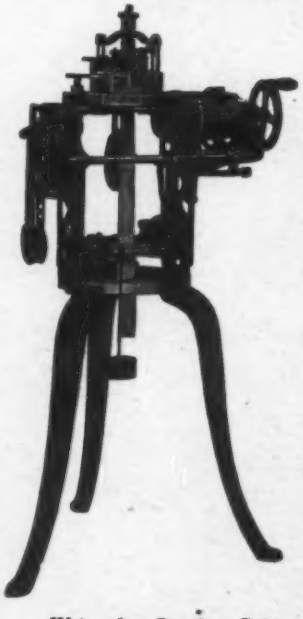
Your percentage of seconds will be lessened if you order the best Latch Needles, Transfer Points and Sinkers.

Let Me Send You Some.

Charles B. Paulus

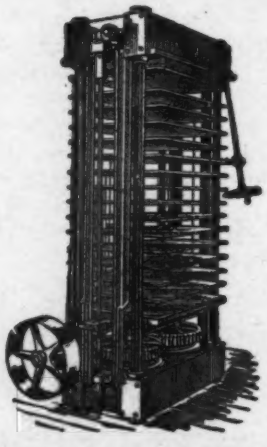
1516 Sixty-Eighth Ave., Oak Lane, Philadelphia, Pa.

H. BRINTON CO.



Builders of
Circular Knitting Machinery
of every kind for every purpose
Hosiery Ribbers
with the very latest attachments
Full Automatic Hosiery Footers
Body Machines
Sleevers, Etc.
for Underwear, Sweaters, Toques, etc.

Write for Catalog, Prices and Samples
213-217 Race Street, PHILADELPHIA, PA.
Canadian Agent: Hartley Kay, Ltd., Georgetown, Ont.



RELIANCE
Hot Plate Screw Press
FOR
Hosiery and Underwear
Write for Catalog and Prices

Reliance Machine Works
FRANKFORD, PHILA.

in the same fix I was last year and I want to work a day and be paid off in cloth'. He is put to work on the same job as last year, and that job is now paying $2.00 a day, though he doesn't know it. He wants the same 80 x 80 this time. It is now quoted at 9 cents a yard and you can't even sell it at that. He does his day's work and is given his cloth, which at the present price amounts to 22.2 yards. He is very much surprised at receiving 22 yards for the same day's work for which we gave him only 11¾ yards last year and says, 'Goodness, haven't you raised wages, though? You gave me nearly double the amount of cloth this year that you did last year for the same work.'"

Previous to the meeting, Mr. Cobb sent the assistant superintendent of Mill No. 3, Carl R. Harris, to canvass all the principal grocery stores in Lancaster to ascertain the retail prices on groceries in July, 1920, which was about the time prices had reached their highest level, and to also learn the prices being gotten at retail for the same commodities in March, 1921. It was found that the retail prices on necessary articles, such as eggs, sugar, meat, flour, etc., had from July, 1920, to March, 1921, been reduced on an average of 53 per cent in Lancaster. Applying this "drop" to the amount of groceries consumed in a period of two weeks by an average mill family of five or six persons, it was determined that the same amount of groceries which cost $28.87 in July, 1920, could be purchased for $13.64 at the time of the investigation, in March, 1921.

Then, as an illustration, Mr. Cobb cited the case of a section man who was getting 57½ cents an hour last July, and whose wage is now 31½ cents an hour. It was shown that this man, at his present wage of 31½ cents an hour, can purchase with 43.3 hours of work the same two weeks' supply of groceries for his home for which it was necessary that he work 50.2 hours last July, even at the higher wage of 57½ cents an hour. The result, in other words, is that the man now has the wages of seven hours work "left over"—the purchasing power of his work has been increased in that proportion.

This is, of course, the result of local conditions in Lancaster, but time spent in efforts of this kind in any mill village where the workers are likely to feel they are being "gouged" mercilessly and unjustly by a wage reduction which is a necessity for their welfare as well as for that of the mill, would no doubt do much toward changing the attitude of operatives on the subject and improve their feeling toward their employers.

"National" Erie Fast Orange A.

This is the latest addition to the series of direct dyes produced by the National Aniline & Chemical Co., Inc., and places in the hands of dyers a product for both self and compound shades on cotton, producing shades from a bright, fiery orange, to a delicate salmon, as well as being useful for other materials.

"National" Erie Fast Orange A is claimed to be particularly fast to light, washing, and perspiration, besides possessing the excellent qualities of easy solubility and level dyeing, which latter feature will commend its use in machine dyeing, whether in the jig or pad. It is recommended for the dyeing of mercerized cotton; for covering cotton and artificial silk effects; and for general union goods dyeing.

The Second World Cotton Conference.

(*Continued from page* 498.)

SIXTH SESSION.

2:15 P. M.—(Room 1, Town Hall)
"Characteristics of Cotton Required by the Spinner and Present Defects in the Raw Material," William Howarth, Fine Cotton Spinners' Association, Ltd., Manchester, England.
"Comparative Statistics of the Textile Industry," Dr. Melvin T. Copeland, Bureau of Business Research, Harvard University, Cambridge, Massachusetts.
Recommendations referred to Committee on the Spinning of Cotton and Committee on Research and Statistics.
(Room 2, Town Hall)
"Finishing of Cotton Goods," A British Delegate.
Recommendations referred to Committee on the Finishing of Gotton Goods.
"The Future Development of Textile Machinery," A British Delegate.
Recommendations referred to Committee on the Manufacture of Textile Machinery.

Friday, June 17

SEVENTH SESSION.

10:15 A. M.—"Financing the Mills," E. T. Parkes, Landon City and Midland Bank, Oldham, England.
"Factory Accidents and Their Prevention." John Jackson, O.B.E., London.
Recommendations referred to the Committee on Banking and Insurance, the Spinning of Cotton, the Manufacture of Cotton Goods, and the Manufacture of Textile Machinery.

EIGHTH SESSION.

2:15 P. M.—"Hours of Labor in the Textile Industry," Albert Thomas, Director of International Labor Office, Geneva, Switzerland.
Recommendations referred to the Committees on the Spinning of Cotton, the Manufacture of Cotton, and the Finishing o fCotton Goods.
A paper on "Transportation," A British Delegate.
Recommendations referred to the Committee on Transportation and the Committee on the Merchandising of Cotton Products.

Saturday, June 18
Sunday, June 19 To be devoted to entertainment by Man
Monday, June 20 chester organizations.

Tuesday, June 21

NINTH SESSION.

10:15 A. M.—(Room 1, Town Hall)
"Cotton Warehousing: A Growing Need," Captain William P. White, Lowell, Massachusetts.
Recommendations referred to the Committee on Compressing and Warehousing.
"The Possibilities of Exact Reporting and Forecasting of Cotton Crops," Dr. W. Lawrence Balls, Sc. D., Fine Spinners' and Doublers' Association, Manchester, England.
Recommendations referred to the Committee on Research and Statistics.
(Room 2, Town Hall)
"Needed Reforms in Compressing, Ginning and Baling," Albert L. Scott and F. S. Blanchard, Boston Massachusetts.
Recommendations referred to Committees on Ginning of Cotton, Compressing and Warehousing, and Spinning of Cotton.
"The By-Product as a Stimulus to Production," Louis N. Geldert, Interstate Cotton Seed Crushers' Association, Washington D. C.
Recommendations referred to Committee on Seed Crushing and the Manufacture of Seed Products.

DOBBINS SOAP MFG. CO.

PHILADELPHIA

For over half a century makers of high grade Soaps and Scouring Materials for Textile Manufacturers

AMERICAN TEXTILE BANDING CO.

(INCORPORATED)

MANUFACTURERS OF

AMTEX

Spinning and Twisting Tapes---Double Loop Bands
Heavy Cotton Webbing for Light Belting and Harness
Leader Tapes for Bleacheries

PHILADELPHIA, PA.

Main Office and Mill:
Belfield Ave. and Wister St., Germantown

Treasurer's Office:
23 South Second Street

JOSEPH T. PEARSON & SONS CO.

MANUFACTURERS OF

BONE DRY
HOSIERY FINISHING BOARDS

THAT WORK ABSOLUTELY SMOOTH

PROMPT SERVICE---RIGHT PRICES
1815 E. Boston Avenue, Philadelphia

Your "Boiling Out"

problems can be satisfactorily solved. Better results coupled with economy.

Full Particulars on request

ELECTRIC SMELTING & ALUMINUM CO.
Lockport, N. Y. Detergent Specialists

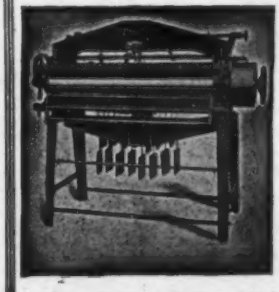
GENERAL MACHINE WORKS

YORK, PA.

Manufacturers of

Circular Rib Knitting Machinery

Cylinders and Dials



50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES have been added to the "1912" Cloth Cutting, Folding and Winding Machine which add at least 50 per cent to its value to YOU.

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to more and greater profits.

THE ENORMOUS SAVING WILL INTEREST YOU.

Mail a card for complete information and prices.

When in need of special machinery, write us.

I. A. FIRSCHING, 614 Broad St., Utica, N. Y., U. S. A., Dept. "C"

TENTH SESSION.

2:15 P. M.—"Research Problems of World Import," Dr. A. W. Crossley, C.M.G., C.B.E., LL.D., FR.S., Director of the British Industry Cotton Research Association, Manchester, England.
Recommendations referred to the Committee on Research and Statistics.
"Hard and Soft Waste Problems," A British Delegate.
Recommendations referred to the Committee on Cotton Waste.

Wednesday, June 22

ELEVENTH SESSION.

10:15 A. M.—Meeting of the Voting Groups to consider and vote upon the various propositions laid before them, and also to elect their representatives on the Executive Committee.

TWELFTH SESSION.

12:15 P. M.—Meeting at lunch of the Executive Committee to choose officers of the Conference.

2:15 P. M.—Announcement of votes taken by the various groups.
Announcement of new officers of the conference.
Resolutions and addresses of thanks.
Adjournment.

Standing Committees.

The following make-up of the standing committees of the Conference, through which the views of the several groups will find expression, was unanimously approved by the executive committee at a meeting held in New York on March 9:

1.—Committee on the Production of Cotton. Chairman, Dwight B. Heard, Phoenix, Arizona. Membership to be determined prior to Conference.

2.—Committee on the Ginning of Cotton. Membership to include 12 American members, three English members and two from other countries.

3.—Committee on Seed Crushing and the Manufacture of Seed Products. Chairman, A. G. Kahn, Little Rock, Arkansas. Six American members, six English members and three from other countries.

4.—Committee on Compressing and Warehousing. Chairman, L. K. Salsbury, Memphis, Tenn. Ten American members, three English members and two from other countries.

5.—Committee on the Purchase and Sale of Cotton. Joint Chairmen, A. K. Barnes, Liverpool, and Joseph W. Evans, Houston, Texas. Six American members, six English members and three from other countries.

6.—Committee on Transportation. Chairman, H. M. Gibson, Manchester. Six American members, six English members and six from other countries.

7.—Committee on Banking and Insurance. Joint Chairmen, Sir James Hope Simpson, Liverpool, and W. Irving Bullard, Boston. Six American members, six English members and six from other countries.

8.—Committee on the Spinning of Cotton. Chairman, R. Worswick, Manchester. Eight American members, eight English members and five from other countries.

9.—Committee on the Manufacture of Cotton Goods. Chairman, F. A. Hargreaves, Burnley, England. Eight American members, eight English members and five from other countries.

10.—Committee on the Merchandising of Cotton Products. Joint Chairman, Sir Edwin F. Stockton, Manchester, and John E. Rousmaniere, New York. Six American members, six English members and three from other countries.

11.—Committee on the Finishing of Cotton Goods, Chairman, Thomas N. Grant, Manchester. Six American members, six English members and three from other countries.

12.—Committee on Research and Statistics. Chairman, John Syz, Zurich, Switzerland. Six American members, six English members and three from other countries.

13.—Committee on the Manufacture of Textile Machinery. Joint Chairmen, J. S. Nuttall, Oldham, England, and Frank J. Hale, Boston. Six American members, six English members and three from other countries.

14.—Committee on Cotton Waste Chairman, J. Barber Lomax, Bolton, England. Six American members, six English members and three from other countries.

The officers of the Conference are as follows: Lord Emmott of Oldham, England, president; Rufus R. Wilson of Massachusetts, general secretary; Frank Nasmith of England, assistant general secretary; Sir James Hope Simpson of England, and W. Irving Bullard of Massachusetts, joint treasurers; and George Badern, France; Hermann Buhler, Switzerland; Fuller E. Callaway and Russell B. Lowe, United States; Count Jean de Hemptinne, Belgium; Giorgio Mylius, Italy; Edward B. Orme and F. Holroyd, England, vice-presidents.

The executive committee is at present made up as follows: E. C. Lasater of Texas, Group 1—Growers; T. F. Justiss of Texas, Group 2—Ginners; J. J. Lawton of South Carolina, Group 3—Seed Crushers and Manufacturers of Seed Products; W. D. Nesbitt of Alabama, Group 4—Compressors and Warehousemen; W. J. Neale of Texas, Group 5—Cotton Merchants; M. J. Sanders of Louisiana, Group 6—Transportation; John T. Scott of Texas, Group 7—Banking and Insurance; F. S. Blanchard of Massachusetts, Group 8—Research and Statistics; Frederic Amory of Massachusetts, Group 9—Spinners; Thomas N. Grant of Manchester, England, Group 11—Finishers; John E. Rousmaniere of New York, Group 12—Textile Merchants and Converters; E. Kent Swift of Massachusetts, Group 13—Textile Machinery; A. G. Marston of Massachusetts, Group 14—Dealers in Cotton Waste; together with the officers of the Conference.

The Eaves Steamship and Tourist Agency, Henry L. Mulligan, Manager, 10 Congress St., Boston, Mass., is serving as American transportation agent for the Conference. Those who desire reservations for the trip to England, and have not already made them should do so at once.

Attractive tours have been arranged at reasonable rates, it is announced, for the period after the Conference, and will include transportation, hotels, sight-seeing, and all other necessary expenses. Each tour will be under the direction of an experienced travel manager. Details of these tours will be furnished upon request to the office of the World Cotton Conference, 45 Milk Street, Boston. Return steamer reservations will also be provided from England, France and Italy, according to the individual wishes of each delegate.

The following is an incomplete list of American delegates available at the time of going to press with this number of COTTON.

American Delegates.

W. D. Adams, Sec. American Cotton Mfgrs. Asso., Charlotte, N. C.
Frederic Amory, Nashua Manufacturing Company, Boston, Mass.
H. D. Arnold, American Printing Company, Fall River, Mass.
W. W. Arnold, Jr., Manchester Cotton Mills, Manchester Ga.
S. Y. Austin, Unity Spinning Mills, La Grange, Ga.
L. S. Bache, President Cotton Exchange, New York City.
H. L. Bailey, Wellington, Sears & Company, Boston, Mass.
Levi Baker, Goliad, Texas
John Bancroft, Joseph Bancroft & Sons Co., Wilmington, Del.

John F. Bannon, Mansfield Bleachery, Barrowsville, Mass.
F. M. Barrett, Augusta Cotton Exchange, Augusta, Ga.
W. E. Beattie, Pres. Victor-Monaghan Mills, Greenville, S. C.
J. M. Beley, Southern Cotton Shippers Association, Memphis, Tenn.
Thomas Bell, Corpus Christi, Texas
C. Randolph Bennett, Amer'n Wool & Cotton Reporter, Boston, Mass.
F. S. Blanchard, Pacific Mills, Boston, Mass.
J. S. Bollard, Memphis Cotton Exchange, Memphis, Tenn.
Willis H. Booth, Guaranty Trust Company, New York City
Ralph Bradley, Haughton & Company, Boston, Mass.
W. V. Brenizer, Austin, Texas
W. T. Caswell, Austin, Texas
A. H. Brenner, Augusta, Ga.
Albert Breton, Vice-Pres. Guaranty Trust Company New York City
F. C. Brown, Bureau of Standards, Washington, D. C.
W. Irving Bullard, Merchants National Bank, Boston, Mass.
W. A. Burnham, National Shawmut Bank, Boston, Mass.
C. W. Butler, Memphis Cotton Exchange, Memphis, Tennessee
Edwin S. Butler, President Cotton Exchange, New Orleans, La.
Harry W. Butterworth, H. W. Butterworth & Sons, Philadelphia
Fuller E. Callaway, La Grange, Georgia
H. M. Carrere, Augusta Cotton Exchange, Augusta, Ga.
Dr. W. R. Cathcart, Corn Products Refining Co., New York City
C. H. Clark, Boston, Massachusetts
W. B. Clarkson, The Clarkson Cotton Co., San Antonio, Texas
James R. Coburn, Androscoggin Mills, Lewiston, Maine
Cecil Cochran, Augusta Cotton Exchange, Augusta, Georgia
David R. Coker, Hartsville, South Carolina
C. A. Coleman, 73 Worth Street, New York City
L. K. Cone, Chamber of Commerce, Tulsa, Oklahoma
J. D. Copeland, Bamberg, South Carolina.
M. D. C. Crawford, 8 East Thirteenth St., New York City
E. P. Cronkhite, Smith, Hogg & Co., 115 Worth St., New York City
James L. Crump, Milam, Italy.
F. M. Crump, Memphis Cotton Exchange, Memphis, Tennessee
John L. Dabbs, E. I. Du Pont de Nemours & Co., Charlotte, N. C.
H. N. Danner, Sec. National Association of Finishers, New York City
Rogers W. Davis, Saco-Lowell Shops, Charlotte, N. C.
V. T. Davis, Southern Cotton Shippers' Assn., Jackson, Miss.
H. G. P. Deans, Chicago, Illinois
W. G. Dixon, Bristol, Rhode Island
J. E. Douglas, Pres. Pioneer Cotton Mills, Guthrie, Oklahoma
W. M. Drake, Memphis, Tennessee
Arthur J. Draper, Charlotte, North Carolina
Albert Greene Duncan, Boston, Massachusetts
H. H. Allison, Augusta Cotton Exchange, Augusta, Georgia
Joseph W. Evans, Evans & Company, Houston, Texas
Charles H. Flato, Kingsville, Texas
Porter Fleming, Augusta Cotton Exchange, Augusta, Georgia
John R. Flippin, Memphis, Tennessee
J. E. Frank, Textile Colorist, Philadelphia
B. E. Geer, President Judson Mills, Greenville, S. C.
Bernard Gelles, W. R. Grace & Company, New York City
M. Gill, Gill, Nelson & Gaine, Dallas, Texas
George L. Gilmore, Lexington, Massachusetts
J. T. Gooch, Los Angeles, California
George P. Grant, Jr., Grant Yarn Company, Fitchburg, Mass.
Frank J. Hale, Saco-Lowell Shops, Boston, Mass.
H. V. Haley, Chicago, Illinois
Dwight B. Heard, Phoenix, Arizona
R. S. Hecht, Hibernia Bank & Trust Company, New Orleans, La.
Charles H. Hudson, American Dyes Institute, New York City
G. R. Huggins, Beaver Mills, New York City
W. K. Jackson, Augusta Cotton Exchange, Augusta, Georgia
Dr. J. B. Johnson, Rock Hill, South Carolina
J. R. Keaton, Oklahoma City, Oklahoma
George H. Lanier, West Point Mfg. Co., West Point, Georgia.
Ed G. Lasater, Falfurrias, Texas
W. S. Lawson, Somersworth, New Hampshire
Walter B. Levett, Standard Cloth Company, New York City
Henry C. Lord, Textile World Journal, Boston, Massachusetts.
John T. Lord, Lawrence, Massachusetts
Eugene Lorton, Tulsa World, Tulsa, Oklahoma
Russell B. Lowe, Parkhill Manufacturing Co., Fitchburg, Mass.
Cyrus B. Lucas, Bercla'r, Texas
A. L. Lustig, The Apponaug Company, Apponaug, Rhode Island
James R. MacColl, Lorraine Manufacturing Co., Pawtucket, R. I.
W. M. McFarlane, Wm. Anderson Textile Co., New York City
Charles T. Main, Boston, Massachusetts
Charles R. Makepeace, Providence, Rhode Island
John W. Manley, Sayles Finishing Plants, Saylesville, R. I.
Richard I. Manning, Columbia, South Carolina
Edwin H. Marble, Curtis & Marble, Worcester, Massachusetts
H. G. Marchant, Leigh & Butler, Boston, Mass.
G. B. Martin, New York City
Al McFadden, Victoria, Texas
Eugene Meyer, Jr., War Finance Corporation, Washington, D. C.
W. E. Mikell, Augusta, Georgia
J. K. Milliken, Mount Hope Finishing Co., North Dighton, Mass.
R. S. Milliken, Nashua Manufacturing Co., Nashua, New Hampshire
E. L. Morrill, Pepperell Manufacturing Co., Saco, Maine
C. A. Nabors, Wilson, Nabors & Pape, Waco, Texas
W. J. Neale, Waco, Texas
Joseph Newberger, Newberger Cotton Co., Memphis, Tennessee
Charles R. Newell, Providence, R. I.
Clarence O'Brion, New Bedford, Massachusetts
S. Odenheimer, Pres. Lane Cotton Mills Co., New Orleans, La.
Homer W. Orvis, 60 Broadway, New York City
Sidney B. Paine, General Electric Company, Boston, Massachusetts
S. F. Patterson, Roanoke Rapids, N. C.
P. G. Pauls, P. G. Pauls & Company, Galveston, Texas
John D. Ramsbottom, Fall River, Massachusetts
Lucius Rash, Rash, Erin & Company, Terrell, Texas
M. H. Reed, M. H. Reed & Company, Austin, Texas
R. E. Reeves, 58 Worth Street, New York City
M. B. Richardson, Montgomery, Alabama
William Richardson, Memphis Cotton Exchange, Memphis, Tenn.
A. J. Ritch, S. M. Bully & Company, Savannah, Georgia
George W. Robertson, Riverside & Dan River Cotton Mills, Danville, Virginia
Edward Rose, Boston, Massachusetts
John E. Rousmaniers, New York City
E. A. Rusden, Textile Finishing Machinery Co., Providence, R. I.
Albert L. Scott, International Cotton Mills, Boston, Mass.
Edwin G. Seibels, 26 Beaver Street, New York City
A. Alex Shuford, Manager Shuford Mills, Hickory, North Carolina
Julius Siegbert, L. Siegbert & Brother, New York City
Thomas W. Slocum, Minot, Hooper & Company, New York City
C. E. Smith, Memphis Cotton Exchange, Memphis, Tennessee
J. J. Smith, William Firth, Inc., Boston, Massachusetts
Rufus P. Snelling, Saco-Lowell Shops, Boston, Massachusetts
L. W. W. Springs, Lancaster, South Carolina
Walter H. Stearns, Providence, Rhode Island
W. K. Stevens, Phoenix, Arizona
J. W. Stevenson, Victoria, Texas
Wallace I. Stimpson, Draper Corporation, Hopedale, Massachusetts
W. Parker Straw, Amoskeag Manufacturing Co., Manchester, N. H
E. Kent Swift, Whitin Machine Works, Whitinsville, Mass.
Charles L. Tarver, Tarver, Steele & Company, Dallas, Texas
Joseph Walker, Columbia, South Carolina
J. Skottowe Wannamaker, St. Matthews, South Carolina
William Weatherford, Milan, Italy
John Weed, Weed & Brother, New York City
Sidney Y. West, S. Y. West & Company, Little Rock, Arkansas
Henry Westheimer, Sea Island Mills, New York City
W. B. White, Augusta Cotton Exchange, Augusta, Georgia
Howard L. Whiteley, Lowell Bleachery, Lowell, Massachusetts
E. M. Wilson, E. M. Wilson & Company, Bartlett, Texas
Rufus R. Wilson, 45 Milk Street, Boston, Massachusetts
S. D. Wilson, Memphis Cotton Exchange, Memphis, Tennessee
W. E. Winchester, Whitney Manufacturing Co., New York City
Albert J. Wolf, New Orleans, Louisiana
J. P. Woodall, Augusta Cotton Exchange, Augusta, Georgia
C. A. Wooten, C. A. Wooten & Company, Helena, Arkansas

Southern Textile Association.

The program and entertainment plans for the annual convention of the Southern Textile Association to be held in Atlanta, Ga., May 13 and 14, have been practically completed.

Trains reaching Atlanta on the morning of Friday, May 13, will be met by a committee whose purpose it will be to look for any mill men reaching the city on that date without hotel reservations. The chairman of the committee, C. V. Ahles, has arranged with the leading hotels of the city to place at his disposal a number of rooms for this purpose, and it will be the duty of the committee to meet the mill men arriving in the city without hotel accommodations, and to care for their needs in this respect. These men will be "Charlie" Warren, William Reynolds, Ward Higginbothem, George Snow and Arthur W. Harris. These men will meet trains at both stations, and if, perchance, you get to Atlanta without reservations at a hotel, let one of these fellows know about it, and they'll fix you up all right.

The convention will begin at 9:30 o'clock on Friday morning, in the convention hall of the Piedmont Hotel, and will adjourn at 12 o'clock noon, when special trolley cars will convey the delegates to Georgia Tech, where a complimentary luncheon will be served. The Friday afternoon session will be held in the Tech "Y" auditorium, after which the delegates will be guests at a baseball game between Georgia Tech and Washington and Lee University. After the game, they will return to the city via special cars, and a dinner will be given Friday evening on the roof garden of the Ansley Hotel. After this dinner the delegates will witness the 9:00 o'clock performance at the Howard Theatre. The Saturday morning session will convene at 10 a. m. in the Piedmont Hotel convention hall.

Ladies accompanying delegates will be joined by Atlanta ladies, and at 11 o'clock on Friday morning will leave the Piedmont Hotel in automobiles for a trip to points of interest around the city, terminating at the East Lake Country Club for luncheon. They will return to the city Friday afternoon in time to join their husbands for the dinner on the Ansley roof garden,

JOHN D. LEWIS

Manufacturer of

Logwood, Cutch, and Other Dyewood Extracts

TANNIC ACID

Main Office
1209 Turk's Head Bldg.

PROVIDENCE, R. I.

Works
Charles & Bark Sts.

BRANCH OFFICE:

NEW YORK, N. Y.
2-4-6 Cliff St.

PHILADELPHIA, PA.
583 Drexel Bldg.

BOSTON, MASS.
Old South Bldg.

ESTABLISHED 1815

ARNOLD, HOFFMAN CO., Inc.

PROVIDENCE, R. I.
BOSTON, MASS.

NEW YORK, N. Y.
PHILADELPHIA, PA.

CHARLOTTE, N. C.

Importers and Manufacturers of

STARCHES, GUMS, DEXTRINE, ALIZARINE ASSISTANT, SOLUBLE OIL, SOAP

And Every Known Material from Every Part of the World for Starching, Softening, Weighting and Finishing Yarn, Thread or any Fabric.

Special Attention Given by Practical Men to Specialties for

SIZING, SOFTENING, FINISHING AND WEIGHTING

Cotton, Woolen and Worsted Fabrics combining the latest European and American Methods.

We believe there is No Problem in

SIZING OR FINISHING

That We Cannot Solve.

FORMULAS for the best method of obtaining any DESIRED FINISH on any fabric cheerfully given.

Bradley Stencil Machine

The Bradley Stencil Machine makes Stencils in half a minute at reduced cost of 1-10c each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Oil Paper, Stencil Paper and Inks.
Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 35c or $3.50 per doz. Manufacturers of Oil Stencil Papers.

Write for Prices and Samples

A. J. BRADLEY MFG. CO.

99 Beekman Street NEW YORK

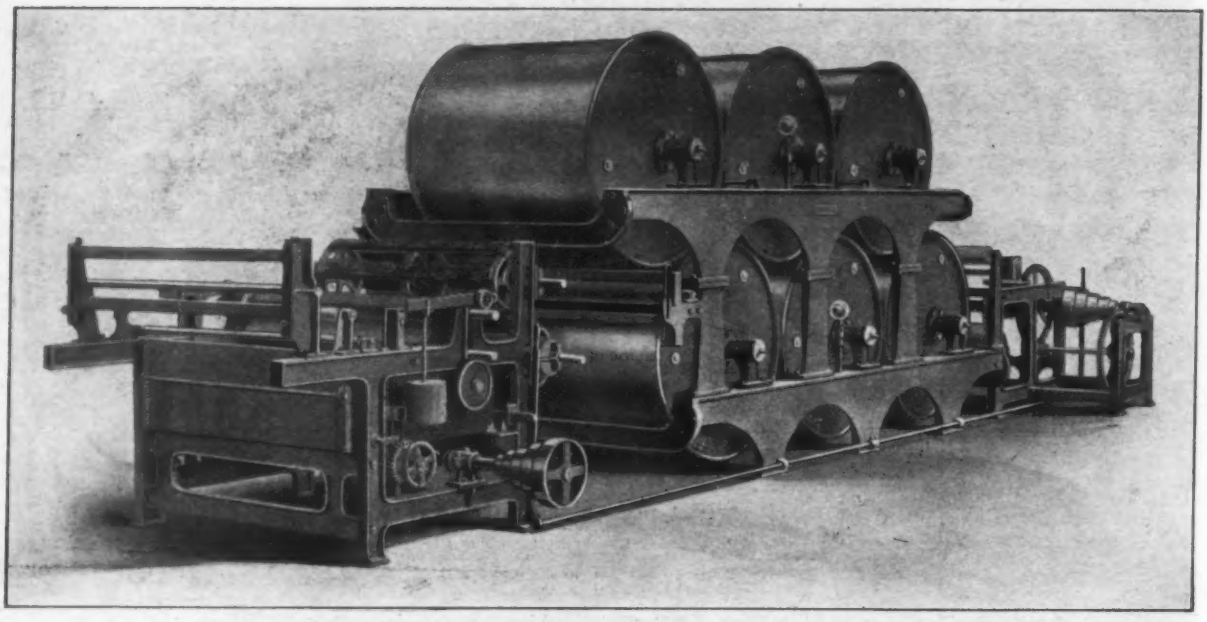
The Walke Box Company, Inc.

NORFOLK, VA.

Manufacturers of

NORTH CAROLINA PINE BOX SHOOKS

FINISHING
Butterworth
MACHINERY



Sizing, Drying and Beaming Machine

THE name "Butterworth" on Finishing Machinery is not merely a label. It is an institution with a century's record of always giving utmost satisfaction in appearance, speed and cost.

THE BUTTERWORTH LINE INCLUDES:

Bleaching Machines	Hydraulic Presses	Mangles (all kinds)
Drying Machines	Dyeing Machines	Calenders (all kinds)
Singeing Machines	Soaping Machines	Color Kettles
Mercerizing Ranges	Tentering Machines	Cell Dryers

H. W. BUTTERWORTH & SONS CO.

Established 1820

PHILADELPHIA

PROVIDENCE OFFICE
Turk's Head Building

Canadian Representative
W. J. WESTAWAY COMPANY
Hamilton, Ontario, Canada

When You Win Your Employees' Praise You've Done Something

"When you win your employees' praise, you've done something," said the general manager.

"I don't know of anything that's harder to get or more worth getting than the appreciation and real friendship of folks who work for you."

And the Monarch Mills of Union, S. C., thoroughly agree with him.

They had the convenience and comfort of their employees in mind when they installed an American Mill Village Laundry last spring.

Of course, the Mills expected to benefit indirectly from the increased efficiency of women-workers who would be relieved from arduous home tasks.

They looked forward to freedom from the Monday labor shortage due to wash-day drafts.

And they were not disappointed.

But here's the big thing:

"We are now doing the washing for about three-fourths of our employees, and their praise of the same is a source of gratification to the management, altho the laundry has been in operation less than three months.

"When you win your employees' praise, you've done something."

And an American Mill Village Laundry will do this for you and earn you dividends at the same time.

In addition to winning your employees' approval for a service which is economical and satisfactory; in addition to eliminating wash-day lulls from your production schedules, it will pay its own way and earn a profit.

Let us show you how—a letter written today will bring you detailed information.

The American Laundry Machinery Company

Specialty Department C, Cincinnati, Ohio

This composite factory group shows the manufacturing plant of the American Laundry Machinery Company, the world's largest producer of laundry equipment, and originator of the American Mill Village Laundry. The service of this organization is sold with every American Mill Village Laundry installation.

FLETCHER WORKS

ELECTRIC UNDERDRIVEN HYDRO EXTRACTORS

The Extractor with Only One Moving Part

We Build for Service—and on Proved Mechanical Precepts

Built with 42 inch, 48 inch and 60 inch Baskets

NOW is the time to equip your plant with the most modern and effective Centrifugal Extractor of its type on the market today. Perfection of motor construction marks a further step forward of this widely known extractor—equally adapted for piece goods, silk, hosiery or yarns—and the demand has kept pace with our ability to make deliveries.

- Rotor mounted on basket shaft
- No centrifugal clutches or couplings
- No belts to endanger operator
- Push button control and interlocking brake
- Oversized ball bearings give operating economy
- No complicated mechanism to get out of order
- Induction motor prevents excessive speed
- Basket accessible all around

For more than a half-century this house has been building centrifugal extractors of the highest grade, and has been foremost in developing machines which will stand the wear and tear of every-day use. That is why you will find Fletcher Works—(Schaum & Uhlinger)—"whizzers" which have been working year after year for decades—we can say generations in many instances.

FLETCHER WORKS

Glenwood Avenue at Second Street **Philadelphia, U. S. A.**

REPRESENTATIVES:

R. R. Street & Company, 28 N. Clinton Street, Chicago, 1 Thomas B. Whitted, Realty Building, Charlotte, N. C.

$10,000.00
2,000.00
$ 8,000.00

We Save $8,000.00 a Year on Dye House Water alone

THE cheapest thing that goes into a dye bath is WATER. It has been proved that if we were dyeing in skeins or warps our annual water bill would be at least $10,000.00. Here in our Providence dye house, with Franklin Package Dyeing Machines our water costs us only $2,000.00 a year—$8,000.00 saved.

All because in Franklin Machines you have only one gallon of liquor to each pound of yarn—THE SHORTEST DYE BATH KNOWN TO THE INDUSTRY! (Dye baths in other processes require from four to twenty times as much liquor per pound).

Now consider what this short dye bath means when it comes to the saving of EXPENSIVE elements in the bath. Chemicals—Hydrosulphite, for example. If you dye with vat colors you have to use at least half the weight of your color in Hydrosulphite, costing around 70c per pound. The short Franklin dye bath will save at least 25% of your Hydrosulphite.

In a previous advertisement we have told of fuel saving effected by the use of Franklin Dyeing equipment. In later issues we will discuss savings in yarn, labor, and floor space.

If you have mordanting or resisting to do, or any other operation where only a portion of the chemical in solution goes into the fibre, the saving runs way up.

And **oxidation!** Oxidized color has no affinity for the fibre, and is WASTE COLOR: In Franklin Machines you are dyeing in a closed kier and oxidation is brought to a hitherto unknown minimum.

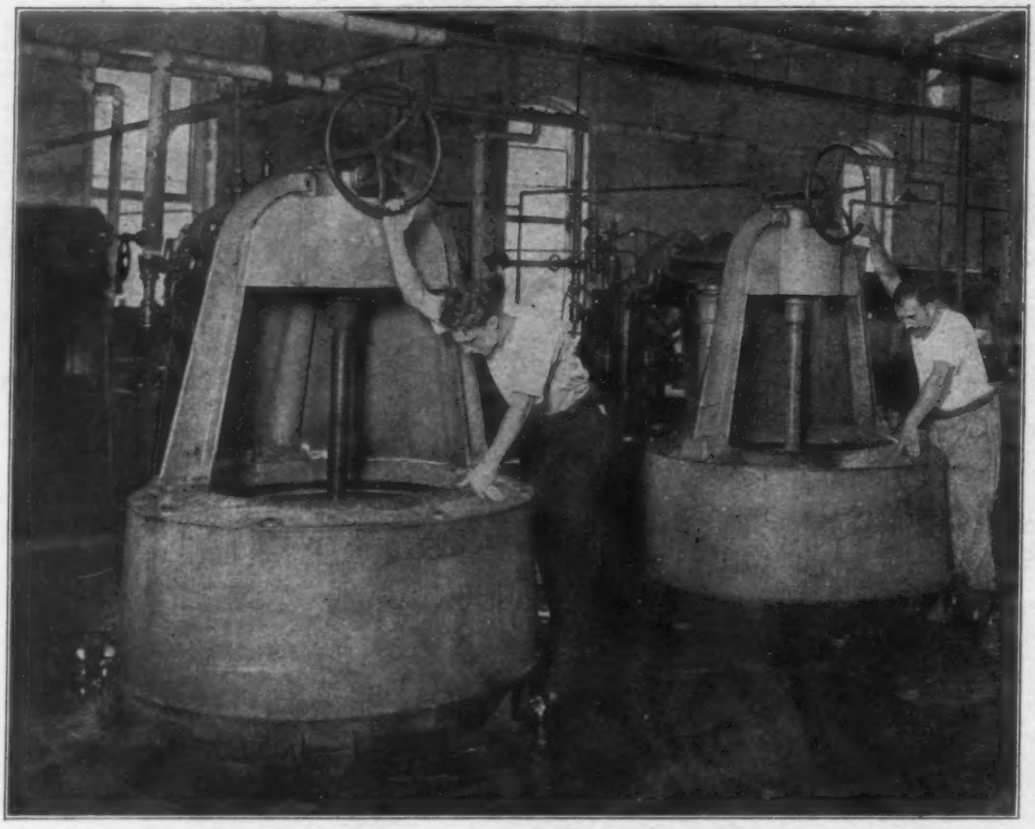
Worth the time, the stamp and the stationery required to send us a letter of inquiry?

FRANKLIN PROCESS CO.

Philadelphia Manchester, Eng.

PROVIDENCE, RHODE ISLAND, U.S.A.

Job Dye Houses in All Three Cities.



TOLHURST EXTRACTORS

will be found In Constant Use

in factories and plants in all parts of the United States and Canada. The photograph depicts two 48″ engine driven **Tolhurst** "Self-Balancing" Extractors, installed in a leading silk dyeing establishment. First used by this firm in 1908, seven repeat orders have followed. These machines are used for handling both piece goods and yarns.

Tolhurst "Self-Balancing" Extractors are constructed in standard sizes with baskets from 12″ to 72″ diameter and are unsurpassed for centrifugal extraction. They are arranged for motor, countershaft, or engine drive from above or below.

We shall be glad to tell you more about the work these machines are doing in this and other representative plants.

TOLHURST MACHINE WORKS

Established 1852 **TROY, NEW YORK**

New York Office, 111 Broadway

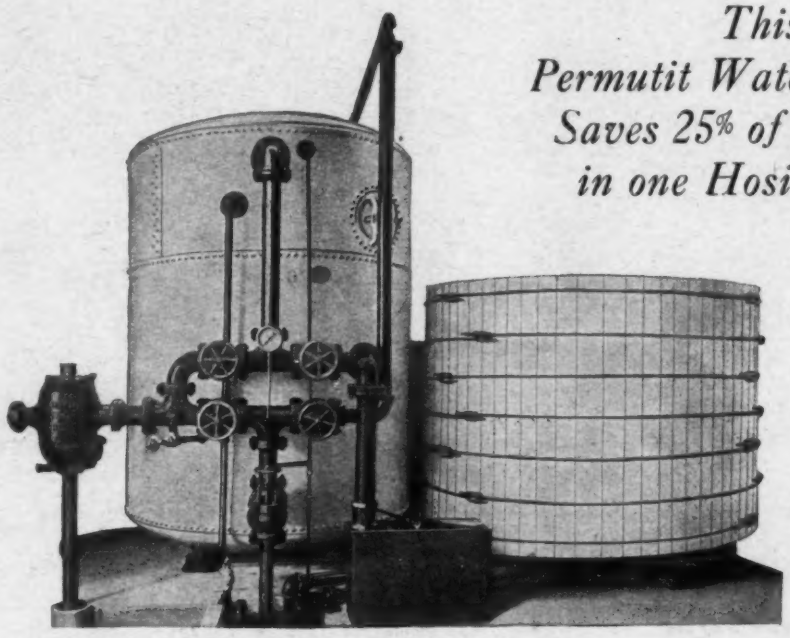
Southern Rep.:
Fred H. White,
Realty Bldg.,
Charlotte, N. C.

Western Rep.:
John S. Gage,
Hartford Bldg.,
Chicago, Ill.

San Francisco Rep.:
B. M. Pilhashy,
Merchants Ex. Bldg.,
San Francisco, Cal.

Canadian Rep.:
W. J. Westaway Co.
Main & McNab Sts., Hamilton, Ont.
400 McGill Bldg., Montreal.

See our exhibits at the Knitting Arts Exhibition, Philadelphia week of May 2.



This Permutit Water Softener Saves 25% of Dyestuffs in one Hosiery Mill

This mill manufactures a well known brand of hosiery in cotton, wool and silk. These are bought in the yarn which is knitted, bleached, dyed and completely finished for the market. Their equipment is modern, they use the most up-to-date methods, but the water supply contains an average of 18 grains of hardness per gallon.

Due to this hardness, many manufacturing difficulties were encountered in producing goods of first quality, so in 1919 they installed Permutit Water Softening Equipment to extract all hardness from the water supply, delivering it clear and zero soft to the mill.

The effect was immediately apparent.

Bleaching became dependable, and the dyed hosiery not only showed vast improvements in quality but a valuable saving of dyestuffs was effected. A 40 dozen lot of hose for example, dyed a certain number "brown," that averaged 63 ounces of dyestuff with the raw, hard water supply, used only 47 ounces with Permutit softened water. Improvements in shades, strength and brilliance of color were noted, but most important of all, the uniformity of the soft water supply permitted dyeing formulas that would consistently match shades. Redying and boiling down wastes were practically eliminated.

It pays to treat your water supply—it pays to invest in Permutit Equipment. Let us send you, free of charge, our booklet, "Permutit in the Textile Industry." Write today.

The Permutit Company
440 Fourth Ave. New York

Filters Water Softeners Special Apparatus

"HURRICANE" DRYERS

The "Hurricane" Line of Dryers embraces all phases of Textile drying. They have established a reputation for Quality of Work produced and low operating and maintenance costs.

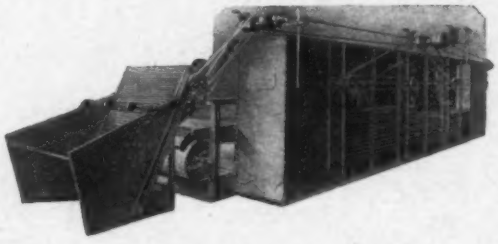
In these days of rapidly mounting manufacturing costs, "Lower Cost Drying" is well worthy your consideration.

Dryers for

Wool	Stock	Rag Carbonizing
Cotton	Yarn	Stock Carbonizing
Silk	Underwear	Cloth Carbonizing
Jute	Hosiery	Yarn Carbonizing

Chemicals *Pigments* *Dyes*

Write for Illustrated Catalogs.



Automatic Stock Dryer for Wool, Cotton, Hair, Linters, Rags. With Patented Spirally Woven Sectional Wire Cloth Conveying Apron.

Performance Counts:

A large New England woolen mill recently installed **eight** large Automatic Stock Dryers in their new plant. These machines were chosen on the basis of past performance in direct comparison with other types of dryers. We always welcome a direct comparison.

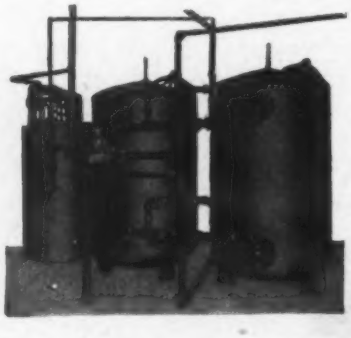
A "Hurricane" Dryer for Every Material.

The Philadelphia Drying Machinery Company

Southern Representative
G. G. Slaughter Machinery Company
Greenville, S. C.

Stokley Street above Westmoreland
Philadelphia, Pa.

Boston Office
53 State Street



Borromite Softened Water In Any Mill

Decreases operating costs.
Speeds up production.

Insures maximum saleability of textile products because of their uniform beauty.

Send for our Circular.

Borromite Company of America

Members of Associated Manufacturers of Water Purifying Equipment

1516-105 West Monroe St. CHICAGO

ARE YOUR COLORS FAST?

To know that your products are fast as to light and to what extent they fade, are facts worth knowing.

The COLOR FADE-OMETER is an instrument for STANDARDIZING YOUR KNOWLEDGE OF YOUR COLORS.

The COLOR FADE-OMETER means "Standardized Sunlight"—constant in quality—constant in quantity—always available—always reproducible.

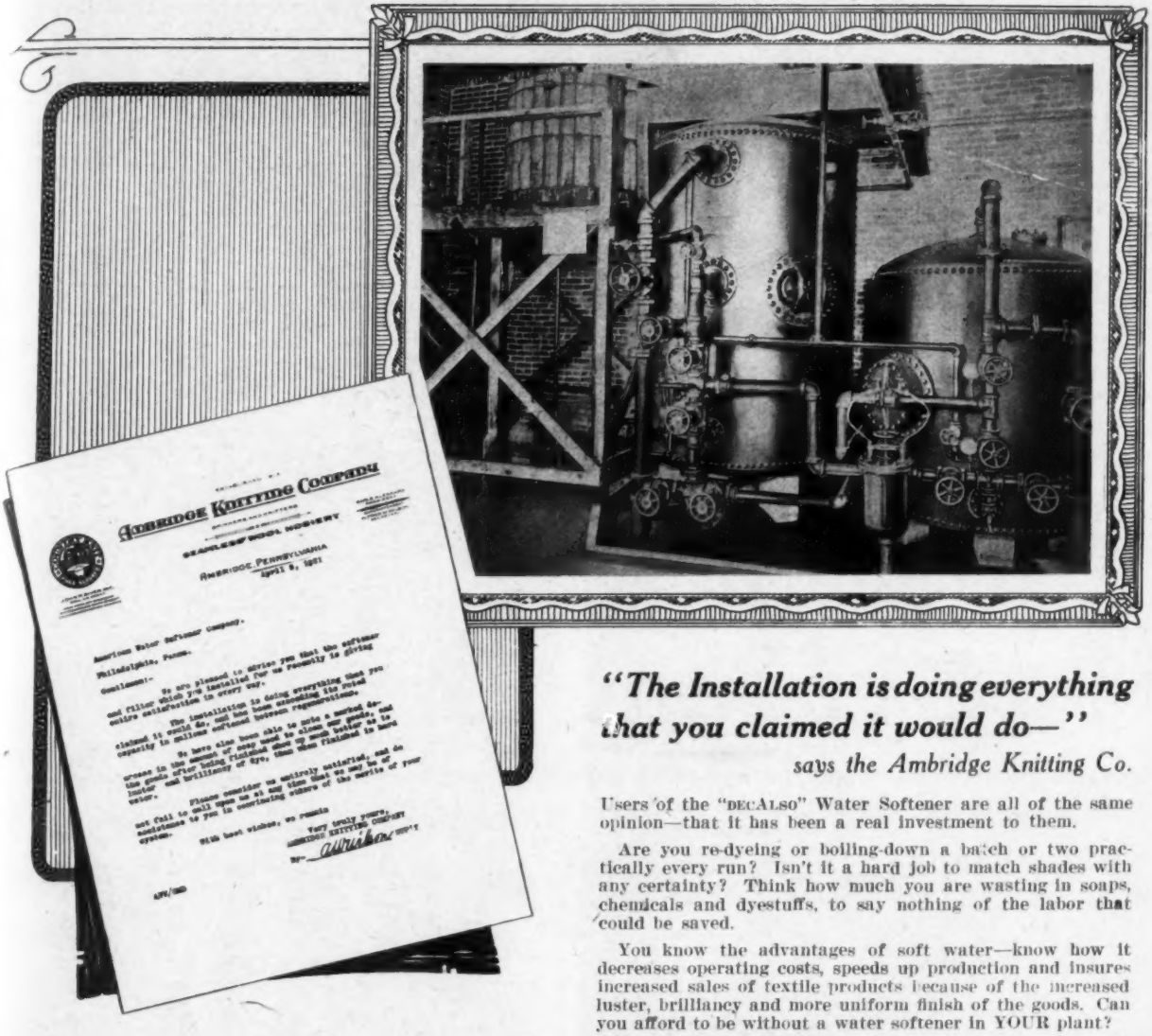
SOME APPLICATIONS OF THE COLOR FADE-OMETER

Fading and color tests of dyed textiles, such as woolens, silks, prints, carpets, velvets, and plushes, upholstering and COTTON.

Fading and color tests of wall paper and other papers, and leathers.

Write for Bulletin No. 29 "The Fade-Ometer Method of Color Testing."

ATLAS ELECTRIC DEVICES CO.
360 West Superior St.
CHICAGO ILL.



"The Installation is doing everything that you claimed it would do—"

says the Ambridge Knitting Co.

Users of the "DECALSO" Water Softener are all of the same opinion—that it has been a real investment to them.

Are you re-dyeing or boiling-down a batch or two practically every run? Isn't it a hard job to match shades with any certainty? Think how much you are wasting in soaps, chemicals and dyestuffs, to say nothing of the labor that could be saved.

You know the advantages of soft water—know how it decreases operating costs, speeds up production and insures increased sales of textile products because of the increased luster, brilliancy and more uniform finish of the goods. Can you afford to be without a water softener in YOUR plant?

The fact that the "DECALSO" is the most scientific and efficient softening apparatus on the market is proved beyond question by enthusiastic letters from users. It is a water softener combining all the advantages of other softeners minus their objections.

The "DECALSO" produces absolutely pure, soft water, economically and continually at a very rapid rate. It retains its activity for long periods requiring less renewals. It requires no long delays to regenerate as it can be stopped, washed, regenerated and put back into service in an hour's time as compared with eight hours with other softeners. It occupies less space than any make of zeolitic softeners. It can be operated by anyone owing to its simplicity.

For whatever purpose you need soft water there's a "DECALSO" Apparatus to meet your requirements better than any other softener you can can secure. Our experts are at your service and will gladly solve your water problem without obligation.

Write today for booklet.

AMERICAN WATER SOFTENER CO.,

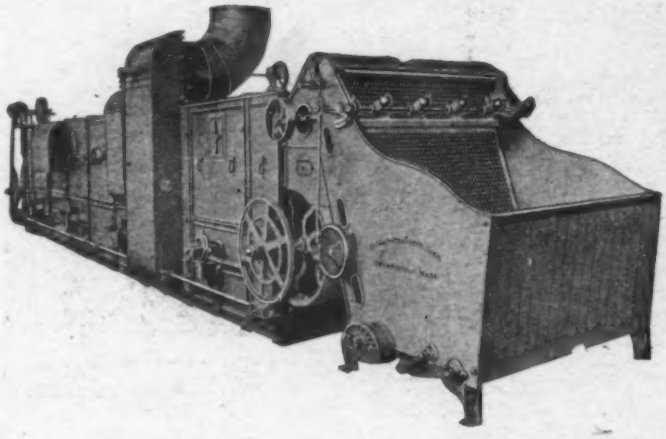
The Oldest Water Softener Manufacturer in America

LEHIGH AVE. AT FOURTH ST. PHILADELPHIA, PA.

REG. U. S. PATENT OFFICE

DECALSO WATER SOFTENERS

PRE-EMINENCE



in any line signifies a superiority, the attainment of which requires the highest merit possible.

SARGENT DRYERS, with over fifty years of specialization in dryer manufacture behind them, thorough in design and construction, embodying painstaking experiments and tests—have the required high merit which justly entitles them to pre-eminence in the drying machinery line. The endorsement of mills and finishing plants which stand at the head of the industry is stronger argument than anything we can say about SARGENT DRYERS. They are recognized as standard the world over.

Write today and let us explain the principles of SARGENT DRYERS. Made in models for drying cotton, linters, wool, hair, flax and any raw material.

C. G. SARGENT'S SONS CORP.
GRANITEVILLE, MASS.
Fred H. White, Southern Agent
Charlotte, N. C.

Sargent Dryers

DURABLE K-W UNIVERSALLY USED

KLAUDER - WELDON DYEING - BLEACHING- SCOURING MACHINERY

There are K-W machines in use which were built nearly half a century ago and which are still doing their work efficiently and economically under severe service. This is sufficient evidence of the durability and capability of K-W Machines after long years of subjection to the ravages of live steam, heat and alkalis.

K-W Machinery by its accomplishments, has steadily and irresistibly built up a reputation that has made the name "Klauder-Weldon" synonymous with the **"world's best dyeing, bleaching and finishing machinery."**

Our interest in upholding the K-W reputation means that you MUST be satisfied, and our suggestions to prospective purchasers are made with the view toward solving any dyeing, bleaching or scouring problem for all time. We will be glad to answer any and all questions without obligation on your part whatsoever.

Write today for K-W Literature

THE KLAUDER-WELDON DYEING MACHINE CO.

Jenkintown, Pa., U. S. A.

H. G. Mayer, Southern Agent,
Realty Bldg., Charlotte, N. C.

DRYING

TEXTILES OF ANY KIND—Raw Cotton, Wool, Silk, Artifiicial Silk; Yarn in skeins or wound packages; Goods in the Piece, knit or woven; Hosiery in bulk or on boards; Sized Rugs and Carpets; Hats; Bags—

A list of materials dried by "Proctor" Dryers would cover practically every branch of textile manufacture.

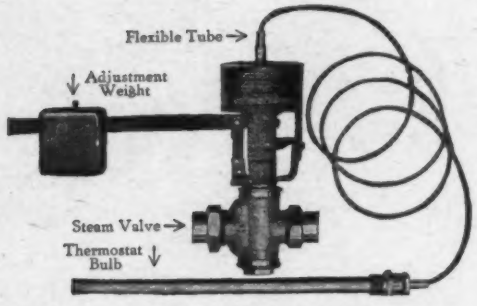
In the thirty-eighth year of their success, "Proctor" Dryers are going into more and more textile mills because they embody the broadest knowledge of the users' detailed needs and best interests.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA

"Proctor" DRYERS

Why the Textile Industry Needs

Powers Automatic Thermostatic Regulators



Powers Regulator No. 11

Designed for control of dye baths, assuring colors without variations or streaks; size boxes, reducing expense of broken ends and chafing, by keeping size at even temperature; hot water tanks; and practically any process where liquid is to be maintained at an even temperature.

Entirely automatic. Reliable. Accurate. Easily applied; put thermostat in liquid to be controlled and valve in steam supply.

The scientifically correct temperature control that results from the installation of Powers Thermostatic Regulators is advantageous in many ways.

By limiting the heat to the precise degree required, it saves steam.

A constant temperature in the dye bath, such as a Powers Regulator assures, prevents streaked places; eliminates seconds or sub-standard goods.

In scouring, automatic regulation of temperature positively prevents discolored, harsh, or tender goods. The same is true in rinsing and washing.

Automatic heat control prevents tearing when drying in the piece.

In sizing, even weight and strength are assured by Powers Regulators, while boiling in the size box will never occur. Broken ends and chafing are largely eliminated.

The Powers Regulator Company

Specialists in Automatic Heat Control

NEW YORK CHICAGO BOSTON TORONTO

Southern Representatives

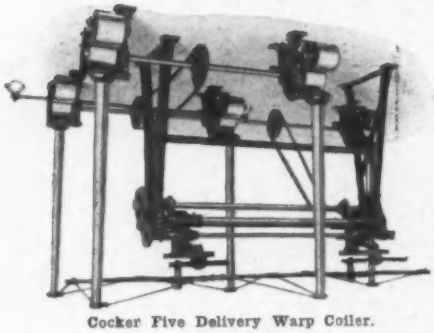
"ASKUS" **IRA L. GRIFFIN, Greenville, S. C.**
GUY L. MORRISON, Charlotte, N. C.

(1324-A)

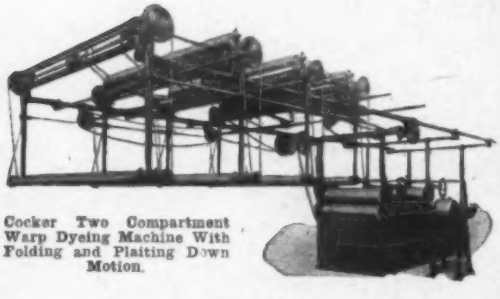
COCKER

WARPING BEAMING DYE-HOUSE

MACHINERY



Cocker Five Delivery Warp Coiler.



Cocker Two Compartment Warp Dyeing Machine With Folding and Plaiting Down Motion.

Cocker Continuous System for Dyeing Indigo.

Experience

We feel justified in emphasizing repeatedly the great value to you of the experience behind COCKER Machinery. When an organization has consistently satisfied its customers for many years it must possess the stability and engineering thoroughness you are anxious to have placed behind your machinery investment.

We specialize in the manufacturing of special and standard types of Warpers, also in the various machinery of all special and standard types used in the subsequent operations of Beaming and Dyeing in Long Chain, Short Chain, and Continuous Systems for all classes of work.

As we are builders of Linking Motions, Folding and Plaiting Down Motions, Coiler Motions and Baller Motions, we are in a position to figure Warp Handing Equipment that are best suited to your mill requirements.

Let us know what your Warper and Warp Handling proposition is and we will be glad to submit a machinery layout for your approval.

A letter from you will bring our catalog and place our experience and service at your disposal without obligation.

Builders of

Warping Machinery

Linking Warpers
Lifter Heads
Balling Warpers
Balling Attachments
Section Beam Warpers
Warper Supplies
Special Warpers

Beaming Machinery

Long Chain Beamers
Special Beaming Machinery
Short Chain Beamers
Warp Splitters

Dye-House Machinery

Boiling Out Boxes
Sulphur Tubs
Sizing Machines
Dye-house Ballers
Indigo Vats
Hydrosulphite Equipment
Continuous Systems
Warp Coilers
Doubling and Splitting Systems
Warp Bleaching Equipment
Drying Cans

Special Textile Machinery

Cocker Machine & Foundry Co.

Gastonia, N. C.

DU PONT DYESTUFFS

The Result of Continuous Care

"One hundred ninety-one firms reported a total of 24,736 employees engaged in the manufacture of coal-tar products, 2,605, or 10.5 percent. were chemists or engineers. This is probably a larger proportion of technically trained men than will be found in any other important manufacturing industry in the U. S."—*United States Tariff Commission Report.*

The reason for this preponderance of technicians is that each step in the intricate synthesis from the lump of coal to the brilliant dyestuffs must be under the constant observation of chemical engineers.

Coal-tar dyestuffs are the final effect of months of tedious laboratory research coupled with more months of semi-commercial experimenting and the last stage of actual plant production. Each step has its ever-watchful chemist, for the greater the care the better the dyestuff.

Du Pont Dyestuffs are what they are, because some 4000 earnest workers labor for their excellence, and of this number 470 are chemists or technically trained men.

E. I. du Pont de Nemours & Co., Inc.
Dyestuffs Sales Department
WILMINGTON, DEL.

Branch Offices
New York Boston Providence
Philadelphia Chicago
Charlotte, N. C.

ZAVON

The Super Solvent

The manufacture of ZAVON, the well known textile solvent has been taken over by a new company and extensive factories have been put in operation at Danbury, Conn.

Here in the new factories ZAVON will be manufactured on an extensive scale to supply the textile industry with this superior solvent.

In the kier, the open kettle, or for all softening purposes, ZAVON is superior to soaps and soluble oils.

Send for working samples of **ZAVON** and learn the advantages of this effective solvent.

ZAVON COMPANY
Incorporated

60 Broadway
New York City

STALEY'S SUPERIOR STARCHES

***Made** from Selected Corn to insure Strength and Uniformity in All Grades.*

***Prepared** through the Latest and Most Approved Process-Equipment.*

***Supervised** by Experienced Men who know the Purpose for which each grade is to be used in*

SIZING for a strong, pliable Warp and in FINISHING for Attractive Merchandise

***Supplemented** by an organization disposed to Co-operate with Textile Manufacturers for Bigger Yardage of Better Cloth.*

***Your Orders** are Our Opportunities in your Service with one or more of these specific grades of NATURAL or THIN BOILING STARCHES*

PEARL *SPECIAL WARP SIZING*
ANCHOR *WHITE OAK*
ECLIPSE *RADIO*

Representing SUPERIOR STARCH STANDARDS in TEXTILE CONSTRUCTION and FINISHING

A. E. STALEY MFG. CO.

DECATUR, ILLINOIS

Improve Your Blacks

"Developene"

Turns a *Rusty Black* to a *Lustrous One.*

THERE is no slight of hand connected with it. Send a pair of stockings, a skein of yarn or a sample of fabric, which has been dyed black, washed but not finished, to our Laboratory.

We will finish it with "Developene" and return to you. There will be such an improvement you will want "Developene" for your dye house right away.

MANUFACTURED ONLY BY

KALI MANUFACTURING CO.

1404-1410
N. Front Street

1409-13
N. Hope St.

MANUFACTURING CHEMISTS

PHILADELPHIA, PA.

Salicylic Acid Prevents Fermentation of Size.
Sole Manufacturers of Hydroxy Oils and

Kali Chlorine Neutralizer--The Superior Anti-Chlor.
Formaldehyde

Why Use Seven Operations When One Will Do It Better?

HERETOFORE to bleach and dye light shade knit goods required about seven different operations. Obviously performing the same results in *one* bath would result in very large savings in time, labor and materials. This, briefly, is what is accomplished in the Autogyp Process of Dyeing.

When searching for ways of reducing the cost of production consider the Autogyp Process which entirely eliminates bleaching.

This patented process which simultaneously dyes to shade and eliminates specks, leaf and shives, saves 50% in time over the former one-kettle process (80% where the overnight Kier-boiling method is used), eliminating 6 separate operations; 3½% of shrinkage; 50% of steam; 30% of labor; ALL chemicals used in the chloride of lime method of bleaching, and turns out a dyed fabric which is just as clean and considerably softer to the feel.

The Autogyp process of dyeing is carried out in any regular dyeing machine used for the particular kind of material to be dyed.

The material is run into the dyeing machine containing boiling water, and allowed to run until thoroughly wet out which should take about 10 minutes. 2 to 3 per cent. of Autogyp is dissolved in cold water and then added to the bath while material is in motion. The necessary dyestuff in a well diluted solution is then slowly added to the bath, and material allowed to run 10 minutes. Steam is then turned on and bath brought to the boiler in ½ hour. Steam is then shut off and goods allowed to run 40 minutes. The bath is then drawn off and the goods rinsed twice and extracted—and that's all.

Absolutely uniform bleaching and dyeing throughout all batches are assured.

We *expect* you to be skeptical about such a revolutionizing process. We simply ask the opportunity of giving you full information. A letter from you will bring the details.

Surpass Chemical Co., Albany, N. Y.

AUTO GYP
Process of Dyeing

The Grasselli Chemical Co.

DYESTUFF DEPARTMENT

Works at:

GRASSELLI, N. J. ALBANY, N. Y.

SULPHUR COLORS: Black, Blue, Brown, Green.
Direct Cotton Colors, Acid and Chrome Colors
MONOPOLE BRILLIANT OIL
Bichromate of Soda Sodium Sulphide
Zinc Dust, Chemicals and Acids

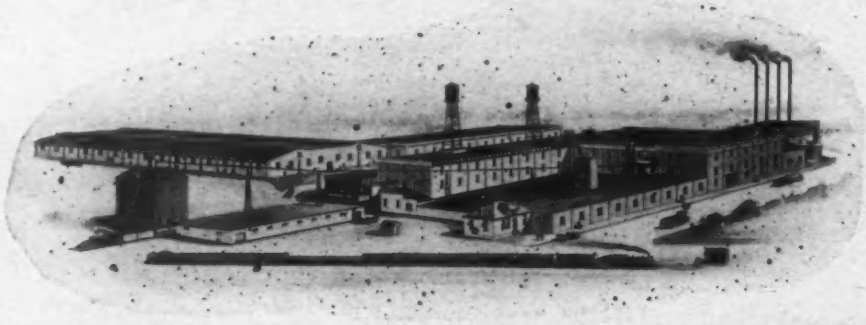
BRANCH OFFICES:

New York	Philadelphia	Birmingham	Charlotte	St. Paul
Boston	Chicago	Cleveland	Cincinnati	Providence
St. Louis	Detroit	New Orleans	Milwaukee	

The Grasselli Chemical Company, Limited

Toronto Hamilton Montreal

Sole Selling Agents for Essex Aniline Works, Inc., Boston, Mass.



VICTOR MILL STARCH

The Weaver's Friend

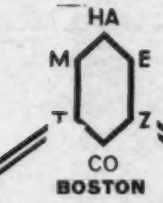
It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

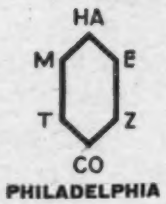
A trial order will convince you that VICTOR STARCH has no equal on the market.

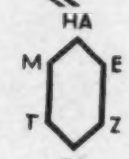
THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.







Aside from the line of Dyestuffs, Intermediates, Cotton Finishes, Turkey Red Oils, Soluble Oils and Leather Oils made in the U. S. by

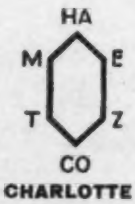
Consolidated Color & Chemical Co.

and

Central Dyestuff & Chemical Co.

ALGOL
HYDRON
HELINDON
THIO-INDIGO

vat colors will be procured for you on Import Licenses that may be granted you by the War Trade Board, or such of these colors as are available and made by the Farbwerke - Hoechst, Farbenfabriken vorm. Fried. Bayer & Co., Leverkusen, Leopold Casella & Co., Frankfurt, Kalle & Co., Biebrich, and Griesheim-Electron (Oehler) of Frankfurt. Licenses are granted for colors not made in the United States or not made in sufficient quantities or at reasonable prices. All products brought over on Licenses will be obtained by us at the lowest prices quoted for export to any one or any Government by the manufacturers.

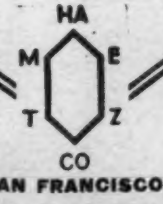


A new color card of American made colors on cotton yarn is being distributed. Have you received your copy?

H. A. METZ & CO. Inc.

One-Twenty-Two Hudson Street, New York City,

Boston Philadelphia Providence Chicago Charlotte San Francisco



CIBA COMPANY, Inc.

Cedar and Washington Streets, New York

Sole representatives in the United States of the
SOCIETY OF CHEMICAL INDUSTRY in BASLE, SWITZERLAND.

Special attention is called to

DOW INDIGO
CIBA BLUE 2 B
CHLORANTINE FAST LIGHT COLORS
(Level Dyeing Direct Colors)

ROSANTHRENE COLORS
(Fast to Light and Washing Developed Colors)

Selling Agents for
CINCINNATI CHEMICAL WORKS, INC., NORWOOD, OHIO.
Branches
Boston Providence Philadelphia Chicago Columbus, Ga.

Stauss 68% Soluble Tallow and Gum—Soluble Oils

for all warp sizing and finishing purposes.
None better.
Manufactured by Geo. P. Stauss,

Importers and Distributors of
Starches, Softeners, Weighting Compounds

Write, phone or wire

Southern Distributing Company
Manuel Faulkner, Sales Mgr.
50 Market St., Phone 3439 Charleston, S. C.

SELL at Profit a Loss ?

Is the graveyard of dead businesses an asset to the manufacturer, the dealer, the retailer or the ultimate consumer?

This Company's answer is an emphatic NO.

Herein lies our answer to the call for prices so low as not to yield a reasonable profit.

A robust, profitable, competitive American dyestuff industry is an asset of incalculable national and industrial value.

This Company's policy is directed toward the attainment of this ideal.

Atlantic Dyestuff Company
WORKS: PORTSMOUTH and BURRAGE
MAIN OFFICE, BOSTON
NEW YORK PHILADELPHIA CHARLOTTE
CHICAGO PROVIDENCE

Starch

—and these stars have a meaning—

They signify the different grades in which Thin Boiling Eagle Starch is offered to the textile industry.

Being the pioneers in the manufacture of **Thin Boiling Starches** we are gratified at the widespread recognition they have received.

Be sure to select the grade best suited to your work. Our knowledge and experience is at your service.

Corn Products Refining Co.

New York

Southern Office *Greenville, S. C.*

Starch

NEW FAST COTTON DYES

The latest improvement in Fast Red, Pink and Orange Dyes for cotton:

NAPHTOL A. S.

NAPHTOL B. S.

NAPHTOL FAST RED GL

(For Printing)

together with the necessary bases for developing on the fibre. These dyes are fast to light, chlorine and alkalies and replace Vat Dyeing Reds, Scarlets and Pinks, also Alizarine and Paranitraniline, Primuline and Rosanthrenes.

Owing to their extreme fastness, these products are admirably adapted for shirtings.

Samples and full particulars will be gladly furnished to interested parties

A. KLIPSTEIN & COMPANY

644-652 Greenwich Street New York City

AN EDUCATIONAL EXHIBIT

Every mill man attending the coming **Knit Goods Exposition** expects to derive benefit therefrom.

It was this thought that prompted the varied display which will be shown at the

WYANDOTTE
BOOTH SPACE 231

Then you will observe the effects produced by the use of

Wyandotte Textile Soda
Wyandotte Concentrated Ash
Wyandotte Kier Boiling Special

in scouring, bleaching, dyeing and finishing processes. The exhibits on display will be wool, cotton and silk yarns, hosiery and underwear. Wool in the grease and scoured as well as worsted tops.

The exhibit will be in charge of experienced men who will gladly answer all inquiries. May we expect a call from you?

THE J. B. FORD CO. Sole Mnfrs.,
WYANDOTTE, MICH.

"BRETON"
MINEROL "F"

For

Cotton Piece Goods

"It gives a softer finish"

BORNE, SCRYMSER CO.

Established 1874

80 South Street, NEW YORK

BOSTON **PHILADELPHIA**

Works: Elizabethport, N. J.

SAYLES FINISHING PLANTS, Inc.

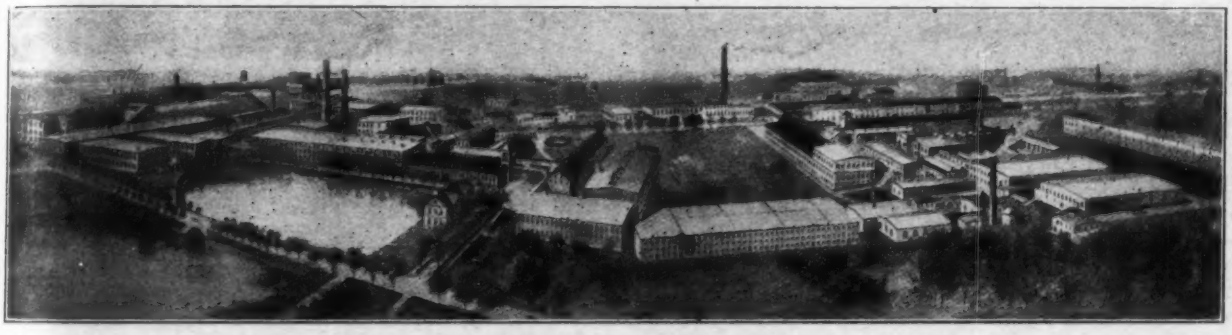
SAYLES BLEACHERIES	SAYLESVILLE, R. I.	PLANT A
GLENLYON DYE WORKS	SAYLESVILLE, R. I.	PLANT B
GLENLYON PRINT WORKS	PHILLIPSDALE, R. I.	PLANT C
GLENLYON YARN DYE WORKS	PHILLIPSDALE, R. I.	PLANT E
NEW YORK OFFICE	72 LEONARD ST., NEW YORK CITY	

SAYLES BLEACHERIES

BLEACHERS AND FINISHERS OF COTTON FABRICS

Wide Sheetings, Shirtings, Lawns, Fancy Dress Goods, India Linens, Nainsooks

ALL WEIGHTS AND WIDTHS



VIEW OF SAYLESVILLE WORKS

GLENLYON DYE WORKS,

Mercerizers, Dyers and Finishers of Cotton Piece Goods

GLENLYON YARN DYE WORKS

Bleachers and dyers of cotton yarn in ball warps and skeins, artificial and natural silk yarns, Colors fast to bleaching a specialty, Facilities for winding and spooling

GLENLYON PRINT WORKS

Bleachers, Dyers and Printers of Fine Cotton Goods and Fabrics of Silk and Cotton

FOR GENERAL INFORMATION

Address:

SAYLES FINISHING PLANTS, Inc.

Saylesville, R. I.

UNITED PIECE DYE WORKS

DYERS, PRINTERS AND FINISHERS IN THE PIECE, OF

All Silk Fabrics, Silk and Cotton Mixed Goods, Silk and Wool, All Cotton Goods, etc.

LODI, N. J.

NEW YORK OFFICE
132 MADISON AVENUE

MILLS
LODI AND HAWTHORNE
N. J.

JACQUES WOLF & CO.

Manufacturing Chemists and Importers

PASSAIC, N. J.

ALL SIZING AND FINISHING PRODUCTS
For Cotton

HYDROSULPHITE
For stripping and discharge printing

INDIGOLITE
For indigo discharge.

BENSAPOL
BLEACHING OIL
CREAM SOFTENERS
GLASGOW SIZE
LEVULINE
LUSTROSE
SOLUBLE OILS
WHITE FINISH

MONOPOLE OIL
Reg. Trade Mark No. 70991.

BOSSON & LANE

Manufacturing Chemists

Specializing
in
BLEACHING
DYEING
SIZING
AND
FINISHING
TEXTILES

Works and Office
Atlantic, Massachusetts

ABERFOYLE MANUFACTURING COMPANY

MERCERIZED YARNS

MAIN OFFICE

CHESTER, PA.

700 EMPIRE BUILDING
PHILADELPHIA

518 ADAMS-FRANKLIN BLDG.
CHICAGO

Mercerizing Gassing Bleaching

We have a new and strictly modern plant for mercerizing, gassing and bleaching.

Located as we are in the center of the combed yarn spinning industry of the South, we are enabled to furnish you with the highest quality processed yarns in all numbers.

The American Yarn & Processing Company

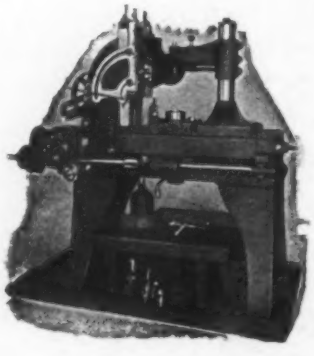
Mount Holly, N. C.

NEW YORK REPRESENTATIVE:
H. B. ROBIE,
No. 346 Broadway,
New York City.

PHILADELPHIA REPRESENTATIVES:
FORREST BROS.,
Forrest Building.

FULL AUTOMATIC, SEMI-AUTOMATIC and HAND OPERATED

Gear Cutting Machines!



Especially Adapted for Use in

Cotton Mills.

Hundreds Now in Use.

Send for special circulars.

The D. E. Whiton Machine Company

New London, Conn.

Like a Mountain Spring Bubbling up in your Mill

DURING the hot summer weather that is coming, especially in departments of your mill that must swelter in **grilling heat, dust,** perhaps, the "QUICKOOL" will be to thirsty workmen like a clean cold mountain spring bubbling up right where they can reach it easily. It will give them new energy and greater comfort.

"QUICKOOL"

Drinking Fountains

cool the water rapidly and at small cost, holding 75 or 100 pounds of ice, which need not be pure water ice since it cannot touch or contaminate the drinking water. The "QUICKOOL " is equipped with the

"Protectajet" Bubbler

which is absolutely sanitary. The jet of water shoots out at an angle, an automatic protector covering the opening so that no backfall of water, perspiration or dust can reach it.

Cold water—clean, plenty of it, handy —and you have more efficient workmen.

Write for prices and details.

The CENTRAL BRASS MFG. CO. of CLEVELAND

Labor Lessened is Money Saved

Quick, easy transportation in and about your plant is a vital item. Excess time or labor means expense. Save it.

Diamond Fibre Receptacles are systematic savers of lost motion. They pay big dividends—far in excess of their cost. They last for years and continue to pay because they are made of non-splintering non-rusting, practically i n-destructible Diamond Fibre. We make a full line of these hardy receptacles; trucks, doffing cars, roving cans, waste baskets, barrels, sample cases and many other things.

Write today for literature and let us show you our latest models.

F
Diamond-F
Dept. 8

Diamond State Fibre Company

Bridgeport (near Philadelphia), Penna.

Branch Factory and Warehouse: Chicago

Offices in Principal Cities

In Canada: Diamond State Fibre Co. of Canada, Ltd., Toronto

No "bad cloth" when you weave with "DUPLEX" FLAT STEEL LOOM HARNESS

STEEL HEDDLE MFG. CO.

GREENVILLE PHILADELPHIA PROVIDENCE

Southern Office

11 Washington St. Greenville, S. C.

Hampton Smith, Southern Manager

The Palmer Adjustible Thread Guide

For Ring Spinning and Twisting Frames

Easily Adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

AMERICAN SUPPLY COMPANY

PROVIDENCE, R. I.

MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping
Etc.

We make a specialty of Harness for Warp Drawing Machines

NOTE—No orders too large for our capacity. None too small to receive careful attention.

PURO SANITARY DRINKING FOUNTAINS ARE NO LONGER A LUXURY

The up-to-date- manufacturer found out that they are time savers—save time by reducing loss of time on account of sickness among your employees—and save time by having a cool drink of pure water available at all times.

PURO Drinking Fountains are cast bronze metal—beautifully nickel plated—so simple that even a child can operate it—yet—there is nothing to get out of order.

For Your Own Protection Install PURO Sanitary Drinking Fountains.

Southern Sales Manager
E. S. PLAYER
Masonic Building
Greenville, S. C.

Manufactured Exclusively by

PURO SANITARY DRINKING FOUNTAIN CO.
HAYDENVILLE, MASS., U. S. A.

A. B. CARTER

Textile Machinery and Supplies

GREENVILLE, S. C.

Southern Agent for

The Dana S. Courtney Co., Chicopee, Mass.
Bobbins and Spools
The True Running Bobbins
Can make prompt delivery

Collins Bros. Machine Co., Pawtucket, R. I.
Tape-Driven Twisters
Consume less power

Fix 'em up Right on the Spot and Prevent Serious Complications

Those little accidents that employees run into eventually may turn out more serious than they appear at first.

First aid on the spot makes it impossible for serious complications to develop, makes it possible for him to keep on the job and probably cheats the lawyers out of a damage suit later on, and incidentally your premium on liability insurance is reduced to the minimum.

Thomas First-Aid Room and Hospital Equipment is a worth while investment. Let our Southern Representative show you why. Write to

Walter Scott,
Ottaray Hotel, Greenville, S. C.
F. H. THOMAS CO.,
91 BOYLSTON ST., BOSTON, MASS.

DON'T MAKE THEM HUNT FOR DRINKS

Workmen who are forced to leave the machine every hour or so and hunt for a drink at some inaccessible hydrant or pail are not producing what they should. That may not cost much for one man—but think of the expense if the whole force does it.

There's only one way to avoid that waste—provide them with plenty of cold, invigorating drinks on the job. Cover the whole factory with

Rundle-Spence "Vertico-Slant" Cooler Fountains

The increase in efficiency will more than pay for the investment—that's the verdict of hundreds of users.

Note the sanitary features of the R & S Fountain. The stream is thrown up at an angle, preventing germs from falling back into the jet. Lips cannot touch the mouthpiece. These fountains are always clean and inviting and are built to give years of dependable service.

There is a type of R & S fountain for every factory or office use.

The Vertico-Slant Cooler Fountain has a galvanized coil through which water passes to drinking head without coming in contact with ice. The interior is insulated with cork, making a great saving in ice.

If you have not decided in favor of drinking fountains—do it now. Write today for our new 74-page catalog.

Rundle-Spence Manf'g Co.
Milwaukee, Wis.

A Clean Sweep

Can be made only with a good sweep. A clean job of scrubbing can be done only with a good brush. The "Two-in-One" Combination Sweep and Scrubbing Brush is made strong of the best materials and stands hard usage and lasts longer than other brushes, with the added advantage that new bottom brushes may be purchased at reasonable cost, the handle and top being practically indestructible. Used as a scrubbing brush the operator stands up, permitting faster work than with the old-fashioned hand brush. It is more effective and robs the task of scrubbing of its unpleasant features.

SOUTHERN BRUSH AND BROOM COMPANY

601 Citizens and Southern Bank Bldg.
ATLANTA, GEORGIA.

Keep the Employes You Have

GIVE THEM THE CONVENIENCES THEY WANT

DRINKING FOUNTAINS
GROUP WASH BOWLS, Etc., Etc.

One Type of Our Bowls

MANUFACTURING EQUIPMENT & ENGINEERING COMPANY
136 Federal St., Boston, Mass.
Address all communications to Framingham, Mass.

VOGEL
PATENTED

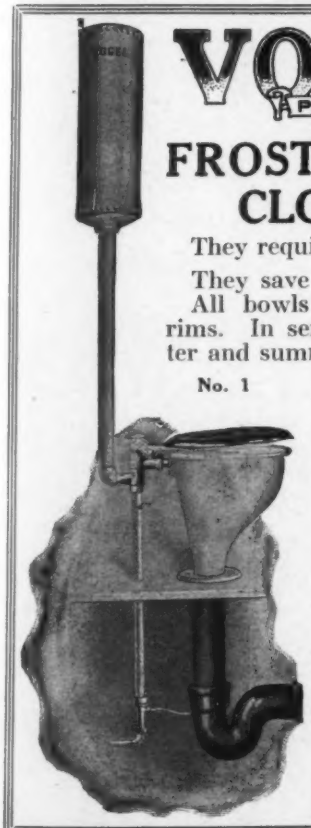
FROST PROOF CLOSETS

They require no pit.

They save water.

All bowls have enameled rims. In service daily, winter and summer.

No. 1



OVER 350,000
Giving
Satisfaction in
All Climates

The ideal water closets for Factories and Mill Villages, where thousands have been installed.

The most durable water closets made — excepting none.

Every Fixture Tested Under Hydraulic Pressure Before Leaving Factory.

INSIST ON GETTING THE VOGEL

Ask your jobber

JOSEPH A. VOGEL CO.

Factory and Office at
WILMINGTON, DEL.

VOGEL
PATENTED

No. 5 FACTORY CLOSET

This fixture fills the demand for a strong and durable automatic water saving closet outfit for factory use. The valve device is extremely simple and repairs, though seldom necessary, can be made by removing the valve cap back of bowl.

Safeguard Against Fire Hazards

The sturdiest concrete or brick wall is not proof against fire in modern industrial plants, unless passage-ways are protected by fire door equipment.

Richards-Wilcox fire door equipment is designed by our own Engineers, to meet requirements of any opening. It affords 100% protection, automatically put into operation against fire sweeping from one section of the plant to another.

The fire hazard in many parts of textile plants is great.

Install Richards-Wilcox protection now.

For definite information showing details of specifications of Richards-Wilcox equipment, ask for Catalogue G-14.

Richards-Wilcox Mfg. Co.
"A Hanger for any Door that Slides"
CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA CLEVELAND LONDON, ONT. AURORA, ILLINOIS, U.S.A. INDIANAPOLIS BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO

THIS
CONVINCING COMPARISON
SHOWS THE SUPERIORITY OF

SIGNODE SYSTEM

OVER THE USUAL BALE TIE.
LET US SEND YOU FULL DETAILS
SIGNODE SYSTEM, INC.
CHICAGO ATLANTA
Boston New York Philadelphia Toronto San Francisco

5/8" x .015 SIGNODE TIE	COSTS 12 % LESS PER FOOT	HOLDS UNDER 800 LBS. PULL	NO "SPIDER" TO INJURE HANDS
Compared with			
USUAL 5/8" x .017 BALE TIE	COSTS 12 % MORE PER FOOT	BREAKS UNDER 500 LBS. PULL	DANGEROUS "SPIDER" OFTEN PRESENT

THE JOHNSON FRICTION CLUTCH

A Better Control for Textile Machinery

You will find the Johnson Clutch a most satisfactory means of driving textile machinery. More efficient and more convenient than the tight and loose pulley. Equally desirable on motor drives.

Made in both single and double types to fit standard pulley sizes. Clean, compact and durable. Grips smoothly and is easily adjusted to any tension.

Ask for the Johnson Clutch on your new machine equipment.

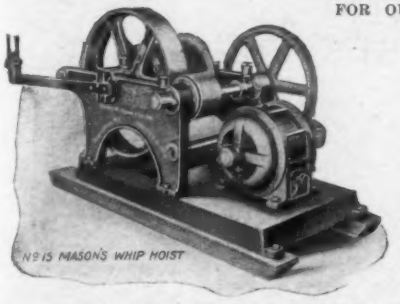
Ask for our Catalog "G"

Single Clutch Broken Away.

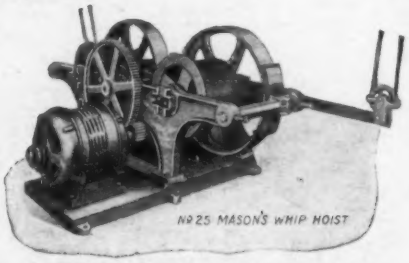
THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

1860—MASON'S PATENT WHIP HOISTS—1921

FOR OUTRIGGER AND HATCHWAY SERVICE



MASON'S
PATENT WHIP HOIST



IN USE AT THE FOLLOWING MILLS

AMERICAN WOOLEN CO.
Washington Mills, Lawrence, Mass.
Riverside Mills, Providence, R. I.
Anderson Mills, Skowhegan, Me.
Royal Weaving Company, Pawtucket, R. I.

20 IN USE AT NEW YORK DOCK CO., BROOKLYN, N. Y.

60 Mason Whips at the N. Y. Central R. R., largest hay depot in the world—33rd St., 11th Ave.

CRIMMINS & PIERCE, BOSTON, MASS.
John P. Murray Stores, 539 W. 39th St., N. Y.
Brown & Adams, 274 Summer St., Boston, Mass.

PROVIDENCE COMBING CO., PROVIDENCE, R. I.
Jamestown Worsted Mills Co., Jamestown, N. Y.
Stanley Works, New Britain, Conn.

18 IN USE AT TERMINAL WHARF & RAILROAD WAREHOUSE CO., CHARLESTON DIST., BOSTON, MASS.
5 in use at Terminal Warehouse Co., Providence, R. I.
7 in use at J. L. Kelso & Co., Storage Warehouse, Union Wharf, Boston, Mass.

UTICA STEAM AND MOHAWK VALLEY COTTON MILLS CO., UTICA, N. Y.
New Bedford Storage Warehouse Co., New Bedford, Mass.
4 No. 20 at Campbell Stores, Hoboken, N. J.

—SPEED 75 TO 400 FEET PER MINUTE—

COTTON———ONE ROPE CONTROLS——HOISTS, LOWERS AND HOLDS THE LOAD———WAREHOUSES

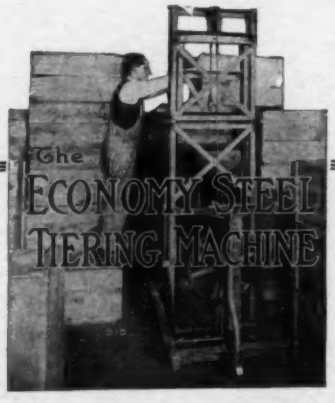
Engineers and Architects make special recommendation of, as well, as specifying them in their plans.
Their special value is in handling baled Wool, Cotton, Hay, Barrels, and cased merchandise.
Whips are used as auxiliary and express service to elevators.

Many of the largest Terminal and Storage Warehouses, Docks and Mills in the United States have from one to fifty or more of our whips.
Our Whips probably handle 75% or more of the wool handled in the Warehouses of Boston, Mass.

VOLNEY W. MASON & CO., Inc.
Established 1860 Telephone Gaspee 1211 Incorporated 1902
PROVIDENCE, R. I., U. S. A.
—SIZES—500—1000—1500—2000 lbs.—

Representative for BOSTON, MASS.
J. L. GLEASON & CO.
ELECTRICAL CONTRACTORS
241 Franklin St., Boston, Mass.

Send us plans of your Warehouse and we will "Whip" it



Are Sales Off?

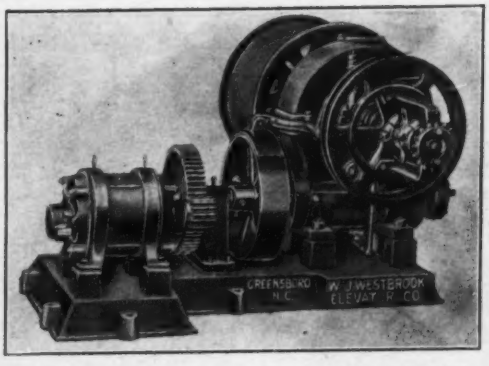
Are you storing your finished product ready to make "Immediate Delivery?"

J. D. COLLINS

STORAGE EQUIPMENT
926 GRANT BLDG.,
ATLANTA, GA.

has the equipment that will reduce your storage and handling expenses. Tiering machines, Electric and hand trucks, Gravity and Power Conveyors of all kinds.

Catalogs and full information furnished upon request.



ELECTRIC HYDRAULIC
HAND POWER

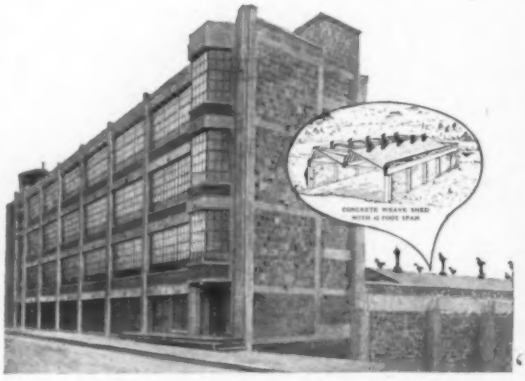
ELEVATORS

W. J. Westbrook Elevator Company

Manufacturers of

Passenger and All Types Freight Elevators

Factory and Main Office
Greensboro North Carolina



Factory, and Weave Shed with 42-foot Span, Concrete Saw-tooth Roof. Designed and constructed for Sidney Blumenthal & Co., Inc., at Shelton, Conn.

Expect the Utmost

THE Thompson & Binger organization is not new, nor old; not small, nor large. It is old enough to have acquired reputation, altho this reputation is not of such long standing that it need not be lived up to; its personnel is far too large to be designated small, but not so large that one of the two principals does not know the status of your job, every day.

You, as a client of Thompson & Binger, Inc., should expect the utmost in design and construction.

THE ENDICOTT-JOHNSON WORKERS have chosen us to do the designing, engineering, and construction of all concrete buildings to be erected by them.

THOMPSON & BINGER
INC.
ENGINEERS & CONTRACTORS
CONSULTATION - DESIGN - CONSTRUCTION

NEW YORK
280 MADISON AVE.

SYRACUSE
GURNEY BUILDING

CONCRETE

Ball Bearings

On Spinning Frame Cylinders

Save 95% of the oil you have been using for the cylinders, and stop the mess and dirt caused by flying, spattering oil.

With ball bearings there is a saving in power, and it is easier to keep your cylinder speed right.

Write to us for further information.

ALDRICH MACHINE
Ball WORKS Bearings
Greenwood, S. C.

CRESSON-MORRIS CO.

POWER TRANSMITTING MACHINERY

Merit Plus Recognition

"The heights by great men reached and kept were not attained by sudden flight."

Time, skill and effort must also proceed merit as surely in machinery as in men.

Time, skill and effort must also proceed merit in order to obtain and maintain for merit the recognition it deserves.

The great number of large installations of Cresson-Morris Power Transmitting Machinery is proof of both the merit and the recognition of the merit that nearly three score years of skill and effort have endowed it with.

The cumulative knowledge of all this experience is always available to you in the recommendations of our engineers.

CRESSON-MORRIS COMPANY
ENGINEERS—FOUNDERS—MACHINISTS
PHILADELPHIA, PENNA.
Branch Office, 141 Milk St., Boston, Mass.

20

Engineering Service

By having an engineering, architectural and power service in our organization, our clients are able to secure, on any industrial project, a complete technical service, under one control and one responsibility.

Whether on Village Development, Industrial Buildings, Power Plants, or machinery arrangements, we offer our organization as a whole to the most economical solution of all commissions entrusted to us.

ROBERT & COMPANY

Architects and Engineers

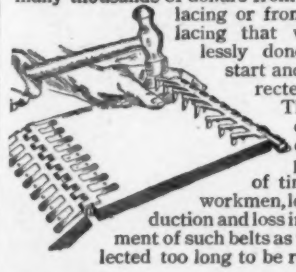
ATLANTA, GA.

Don't Handicap Your Belts!

Belts Work Right if Treated Right

Any belt in order to work properly must be treated right. The attention should not cease with the buying. The specialized knowledge utilized in the buying should also be a factor very much in evidence when selecting the lacing.

Manufacturers annually stand a loss of many thousands of dollars from poor belt lacing or from a job of lacing that was carelessly done at the start and not corrected in time. This loss includes the cost of repairs, loss of time in idle workmen, loss in production and loss in replacement of such belts as were neglected too long to be reclaimed.



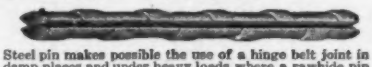
The Most Popular Belt Lacing

A lacing that because of its very simplicity as well as its proven absolute efficiency has acquired and earned preference is ALLIGATOR Steel Belt Lacing. Once its steel toothed jaws have gripped two belt ends into a perfect joint, it "never lets go." The chance for error in lacing is small and even the inexperienced workman can make a "regular" job of it. It is so simple and easy to apply that only a hammer is needed and about three minutes of time.

Reasons for ALLIGATOR Superiority

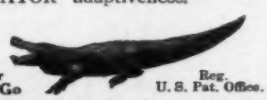
The perfect joint provided by ALLIGATOR Steel Lacing is smooth, flexible and conforms to the pulleys like the belt itself. Does not jump like a rawhide lacing. Either side of the belt can be used with equal facility. The strain of pull is on edge of staggered teeth thus preserving the tensioned fibers of the belt in their full strength. Fasteners presenting the flat side to the pull weaken the belt by cutting these fibers.

Note double staggered teeth of Alligator Lacing. The teeth pierce the belt and are clinched tightly with a hammer.



Steel pin makes possible the use of a hinge belt joint in damp places and under heavy loads where a rawhide pin will not stand up.

For whatever purpose belts are used in any industry, ALLIGATOR Steel Belt Lacing made in all sizes, is found more practical than others. The tremendous numbers of these lacings applied every year tell their own eloquent story of "ALLIGATOR" adaptiveness.

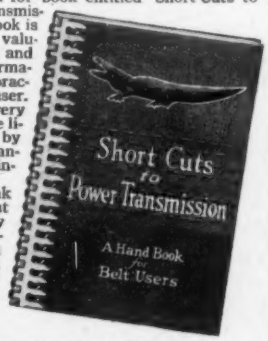


Never Let's Go — Reg. U. S. Pat. Office.

Write for Free Belt Book

Send coupon for book entitled "Short Cuts to Power Transmission." This book is chock full of valuable belt data and simplified information for the practical belt user. Should be in every plant reference library, and read by master mechanics, shop superintendents, etc.

Fill out blank below, tear out and mail today—if you are interested in ALLIGATOR Steel Belt Lacing—the better lacing.



FLEXIBLE STEEL LACING CO.
4619 Lexington St., Chicago
135 Finsbury Pavement, E. C., London

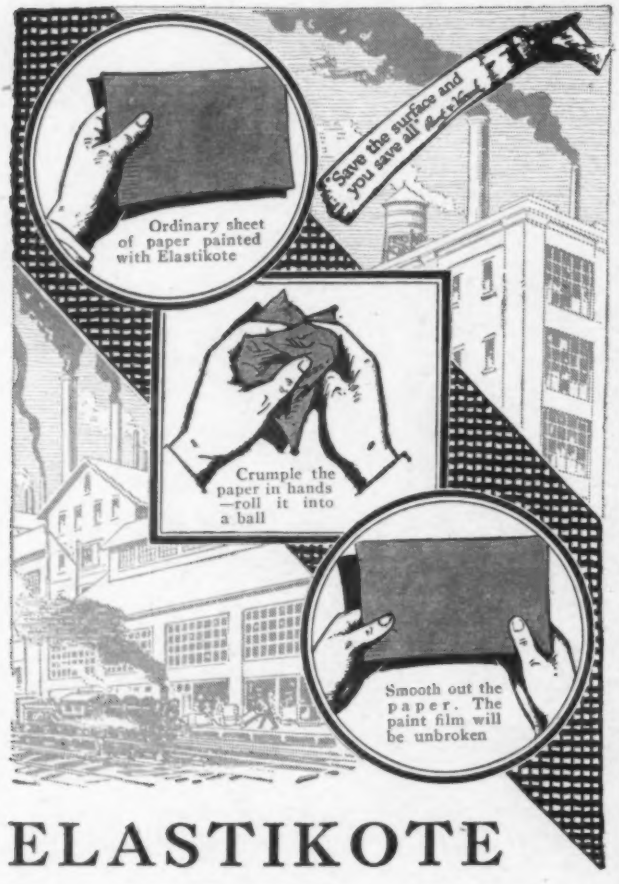
FLEXIBLE STEEL LACING CO.,
4619 Lexington St., Chicago.

Gentlemen: Without obligation kindly send me price lists and complete details on Alligator Steel Belt Lacing and indicate a convenient source of supply. Also your book, "Short Cuts to Power Transmission."

Firm Name.....

Address.....

Name of Enquirer.....


Ordinary sheet of paper painted with Elastikote
Save the surface and you save all
Crumple the paper in hands —roll it into a ball
Smooth out the paper. The paint film will be unbroken

ELASTIKOTE

Never Cracks
Resists Acid Fumes
Lasts for Years

Make This FREE Test

Send for this free test of Elastikote—the paint prepared especially for use on industrial buildings. See for yourself that Elastikote can't crack. Note its elasticity and why Elastikote withstands conditions ordinary paints cannot resist. Learn why America's leading industries have been using Elastikote for years.

Just have your stenographer attach this advertisement to your letterhead—for complete details and this free test.

THE TROPICAL PAINT & OIL COMPANY
"The Firm that Serves with What Preserves"
CLEVELAND, OHIO

TROPICAL
Paints—Enamels—Roofing Materials

Mill Men!
Thank Yourselves for the Better Lubrication you get from

NON-FLUID OIL

Modern Textile Lubricants

You saw the advantages in the unusual ability of NON-FLUID OIL to stay put instead of leaking or throwing from bearings. Many of the new ideas and improvements in the NON-FLUID OIL of today are due to *your* own experiments—sent to us from time to time.

To those few Mill men who are not now using NON-FLUID OIL we would say that no other lubricant has been so generally adopted all over the country.

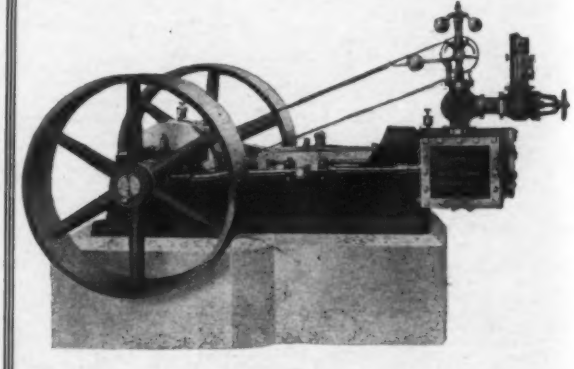
Use NON-FLUID OIL throughout your Mill. It will provide better lubrication at less cost per month and abolish spoilage from oil stains—NON-FLUID OIL will not drip, spatter or creep.

Testing samples and Bulletin sent free—Just send your name.

New York & New Jersey Lubricant Company

401 Broadway NEW YORK

Southern Agent, LEWIS W. THOMASON, Charlotte, N. C.
Ample Stocks at Our Branches
Charlotte, N. C. Atlanta, Ga. New Orleans, La.

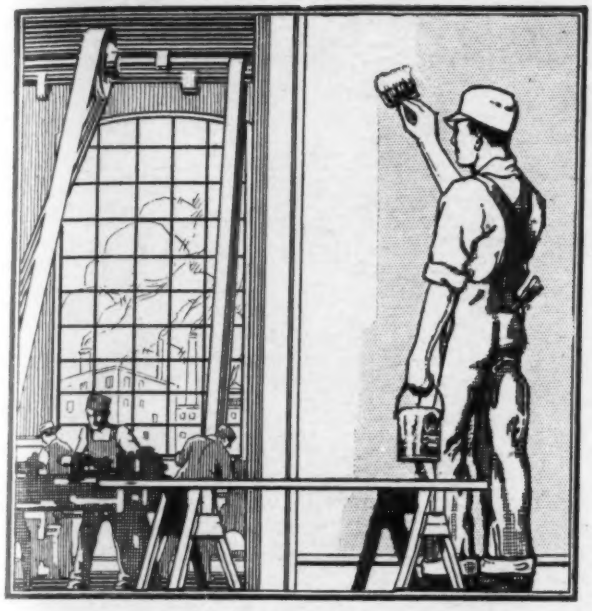


J. S. Schofield's Sons Co.

Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes. Heavy Castings and Wrought Iron Works.



Daylight Is Free

Reduce your lighting bills by using more daylight

Here is how you do it

Simply paint the interior of your plant with

C-H PERMA-WHITE

A gloss mill white that stays white

The difference in your lighting bill will soon pay for the entire paint job. From then on what you save is velvet.

C-H Perma-White has great covering capacity and it stays permanently white. Its smooth, dirt resistant surface is easily washed.

Write or wire our Charlotte branch for quotations

We also carry in stock at Charlotte a complete line of C-H Paints and Varnishes, as well as window and building glass of every description.

F. J. COOLEDGE & SONS

CHARLOTTE ATLANTA SAVANNAH

Oldest Manufacturers of pure paints, stains and varnishes in the South. Largest dealers of plate, window and building glass in the South.

COOLEDGE CH HYGRADE
Paints and Varnishes

Illustration shows one 3-in. and one 2-in. Jenkins Iron Body Globe Valve with brass bonnet installed on fire pump, steam and water lines in prominent Philadelphia power plant.

Dependable in the emergency

A FIRE pump and all the equipment in connection with it should be chosen with utmost consideration —"chance" must be eliminated.

For this reason thousands of genuine Jenkins Valves are installed on steam and water lines running to and from emergency fire pumps, because they can be depended upon in the time of need.

When the call for fire line pressure comes, Jenkins Valves are ready. They can be opened easily; they do not stick at the seat and are free from corrosion. When closed they are tight under pressure.

Jenkins Valves of all types go into service and *stay* there. Under both usual and unusual conditions they give the utmost in service and satisfaction.

You can select a Jenkins Valve of the type required and install it with confidence, for each valve is made for the maximum service, not merely for the average, and so *tested* before it leaves our factory.

Jenkins Valves are made in standard, medium, and extra heavy patterns in types and sizes to meet all power plant requirements. They are obtainable through supply houses everywhere.

***Jenkins Valves* are made only by Jenkins Bros.—the genuine bear the name and Jenkins Diamond cast on the body.**

JENKINS BROS.

New York Boston Pittsburgh
St. Louis Philadelphia Washington
Chicago San Francisco Montreal
London Havana

FACTORIES: Bridgeport, Conn., Elizabeth, N. J., Montreal, Can.

Jenkins Valves SINCE 1864

Let DADDY "KIRK" handle YOUR orders for

TIMBERS—FRAMING
FLOORING—CEILING
SIDING—LATHS
PINE, CYPRESS AND
RED CEDAR SHINGLES
MAPLE FLOORING

KIRKPATRICK

Lumber & Timber Company
BIRMINGHAM, ALA.

Write Us Before Buying. You will save money

WE GIVE REAL SERVICE

Alcolite Lamps Made for Textile and Industrial Plants

A Knockabout Lamp for Rough Service

This lamp has long been looked for by the Consumers of Lamps in the United States.

It Stands Where Other Lamps Fail
It is among the Peer of Lamps. For a Lamp that will withstand Vibration the "ALCOLITE" has proven itself to be the Lamp.

Filament Positively Unbreakable
Downward Candlepower 21 per cent greater than the regular Tungsten Lamp with the same Type Reflector.
A Trial Order Will Make You a Booster for ALCOLITE.

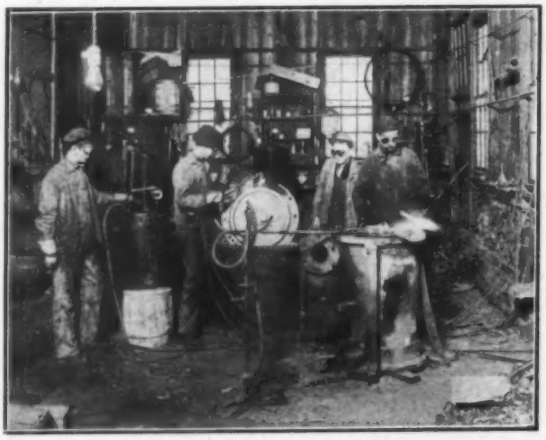
TUNGSTEN NITROGEN VACUUM OR GAS FILLED LAMPS ALL SIZES

Built for Service.

Write for prices and information—Dealers Wanted.

Associated Lamp Company
Manufacturers and Distributors
Southern Office
LUKE SEAWELL,
'Phone Ivy 4434.
422 Austell Bldg., Atlanta, Ga.

QUICK WELDING SERVICE



Welding a cylinder, 2000 lbs. and cylinder head 3 inches thick weld 20 inches—for Block Coal Co., Block, Tenn.

DON'T DISCARD YOUR BROKEN PARTS OUR SERVICE SAVES TIME AND MONEY

There is no need of discarding broken machines and machine parts—there is no need of shutting down and waiting an indefinite length of time for delivery of new parts.

Many mills know through experience that should a machine breakdown occur, it can be put back in operation quickly by calling on AUTOGENOUS.

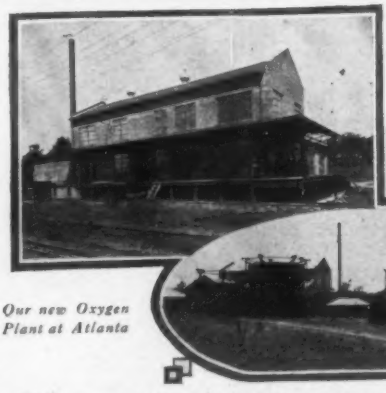
We have just completed the repair on the crosshead and main bearing of a 1200 H.P. engine for the Brookside Cotton Mills. Practically every cotton and knitting mill in the vicinity of Knoxville has taken advantage of and profited by AUTOGENOUS Welding Service. Many of these jobs were extra large and caused a shutdown of the plant, and much time was saved by our quick service.

No matter how bad the break, no matter how small or large the machine or part, AUTOGENOUS Welding Service can save you money.

Full Details Sent on request. Wire, Phone or Write

AUTOGENOUS WELDING CO.

Oxy-Acetylene and Cutting is All Metals.
903-5 No. Central Ave., Junction Central and Broadway, Knoxville, Tenn.



Our new Oxygen Plant at Atlanta

PROMPT DELIVERY 99.5 Pure Oxygen

WE have cut the cost of welding to our customers to the minimum by installing oxygen supply stations at convenient points over the South. These stations can ship oxygen to you on short notice and being located near you, the freight cost is negligible.

We have just completed a new oxygen plant at Atlanta which is now manufacturing the purest oxygen. Regardless of the quantity of oxygen gas your welding jobs consume, if this gas isn't as pure as STANDARD, you are losing money. When you use STANDARD OXYGEN you are reducing your welding costs to the minimum, for STANDARD Oxygen is 99½% pure—the best that can be bought.

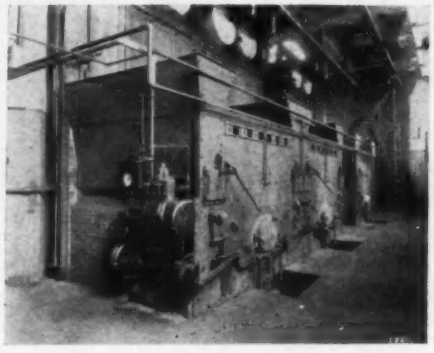
STANDARD is the first company in the South to manufacture oxygen, and satisfaction is assured by prompt shipments, full measure and absolute purity of oxygen. This satisfaction is attested to by the fact that our business has increased over 800% in the last two years.

There's a service station located near you. Write the one nearest you.

STANDARD GAS PRODUCTS CO., INC.
ATLANTA, CHATTANOOGA, GRETNA, LA.

STANDARD
WELDING APPARATUS AND SUPPLIES

Detroit Stokers



Detroit Stokers in Coca Cola Plants

Two Detroit "V" Type Stokers were installed in the Coca-Cola plant in Atlanta, Georgia, in 1919. These Stokers have been in constant operation since that time. They have given such excellent satisfaction and have proven their value in elimination of smoke nuisance and economical power production to such an extent that a

Repeat Order

for two more for their new Baltimore plant was placed this year. Repeat orders of this kind are constantly coming in and are the best proof of the excellent satisfaction that Detroit Stokers are giving in actual operation. Labor and fuel costs can be greatly reduced and smoke nuisance entirely eliminated with Detroit Stokers.

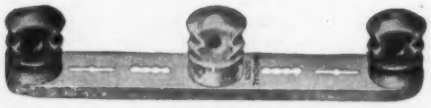
Our free Engineering Service will help you solve your power production problems. Write for our catalog.

Detroit Stoker Company

7336 Woodward Ave., Detroit, Mich.

BRANCHES

Chicago New York Philadelphia Cincinnati
Cleveland Pittsburgh Boston Atlanta



"NATIONAL" BRACKETS

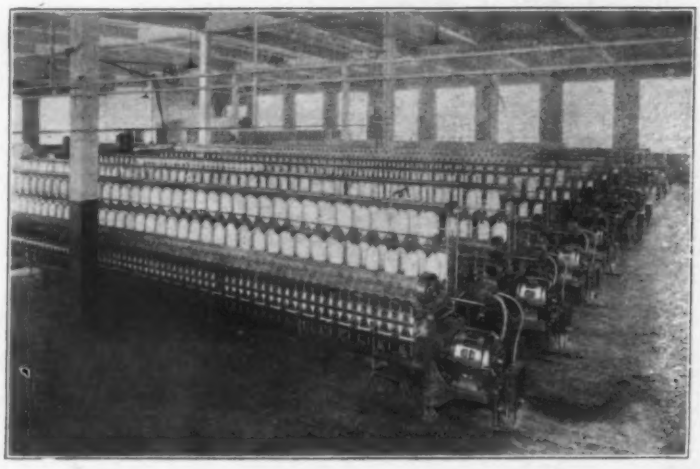
NATIONAL Brackets are especially adaptable for use in carrying power lines in industrial plants, as well as for outside construction work. They are practically univesral in application; they do not require tire wires; they are furnished complete with insulators. Write for Bulletin 602.

National Metal Molding Co.

General Offices: Pittsburgh, Pa.

Atlanta Office:
Healey Building

Textile Motors



Another Modern Installation of Allis-Chalmers Textile Motors in the South

ALLIS-CHALMERS

MILWAUKEE, WIS. U. S. A.

Speed in Service is Only Rivaled by Accuracy
Each Would Be Useless Without the Other

Unfailing Service

In the struggle and stress of modern business life every moment of delay represents a loss of time and money which cannot be regained.

When promptness, accuracy and dispatch are the vital elements in the delivery of electric equipment or supplies it is natural to turn to the Carter Electric Company for service.

This is an organization whose members are trained to meet the demands of any emergency and this organization is ready to serve you on an instant's notice.

If your requirements cover Rubber Conduit Wire, Switches, Safety Switches, Wiring Devices, Fuses, Lamps or other electric supplies, it is only a matter of a few hours before we can place them in your hands.

This is because our warehouses are always fully stocked—everything you may need and in large quantities—and with every modern facility for handling your business the Carter Electric Company pledges you **Unfailing Service.**

Carter Electric Company

63 Peachtree Street, Atlanta

BRANCHES:

New Orleans, La. Pine Bluff, Ark. Forest City, Ark.

And all principal points of Texas.

GOOLD & CO.

Head American Office

71 Madison Avenue

MEMPHIS, TENN.

Merchants and Exporters

To Our Own Firm

JOHN C. GOOLD & CO.

LIVERPOOL, ENGLAND

MEMPHIS

The Great Southern Gateway East to West

Population 175,000—and Growing

Memphis is the largest inland cotton market handling actual cotton in the South. Receipts run 700,000 to 1,000,000 bales per year.

These receipts will be materially increased when the opening of ten million acres of land in the St. Francis Valley is finished. This valley has been protected by secure levees and is being rapidly developed.

As a market for short fiber cotton, such as linters and cotton hull fibre, there is no other market in the world that can compare to Memphis. There are more fiber mills in Memphis than in any other city in the world and the trade in linters is far above the trade of any other market. Over one-half of the total crop of the country is sold through Memphis concerns.

Memphis is also the market for the fine long staple cotton grown in the rich Yazoo and Mississippi River Deltas. This long staple cotton is much sought after and is used in making the best grade of cotton goods.

A statement of the Memphis Cotton Exchange issued on July 31st, 1920, shows the total value of the year's receipts, $118,376,300.00.

Memphis foreign exports aggregate approximately $100,000,000 annually, and these exports include 500,000 to 700,000 bales of cotton. It is the home of the world's largest cotton warehouse, which is operated by the Memphis Terminal Corporation.

Transportation facilities are unexcelled by any city south of the Ohio River. Memphis is served by ten main systems of railroad, in addition to the Mississippi River with its Government barge line. The only bridges crossing the Mississippi River south of the Ohio River are located here, making Memphis the gateway to and from the West and Southwest. Owing to its geographical and other advantages, Memphis leads as a distributing center.

Total deposits in Memphis banks November 15, 1920, were $77,872,263.86. Total resources as of the same date were $121,571,434.74. Capital and surplus, $10,521,412.95.

The city has eight hundred manufacturing industries, employing 31,500 men and women, and to show the rapidity of its growth more than 141 industries were located in Memphis with the cooperation of the Chamber of Commerce during the year of 1920.

Normal labor conditions in Memphis are unsurpassed. 95% of the population is native born. This is a natural labor center, there being no other city of considerable size within 132 miles. Labor is attracted here from the numerous railroad towns in all directions and from points north and south on the river.

Memphis draws her coal supply from Western Kentucky, Southern Illinois and Alabama, over six coal bearing railroads and also on barges into this well situated market. There is always an ample supply on hand.

Health and living conditions are very favorable. The city is located on a bluff overlooking the river and is supplied with pure artesian water by the largest artesian water system in the world, which water is used for all purposes.

Memphis has the most active Chamber of Commerce in the South, with membership of 4,000. Its function is to help you. Write for further information.

Memphis Chamber of Commerce

Memphis, Tennessee

Delta & Pine Land Co.

OF MISSISSIPPI

THE LARGEST

COTTON PLANTATIONS

IN THE WORLD

Located at Scott, Miss.

Originators of

Delinting Cotton Planting Seed

and Largest Shippers of

COTTON PLANTING SEED

in America

EXECUTIVE OFFICES

Memphis, - - Tenn.

Codes:
Meyers 40th
Shepperson's '78

Cable Address:
"Wakefield"

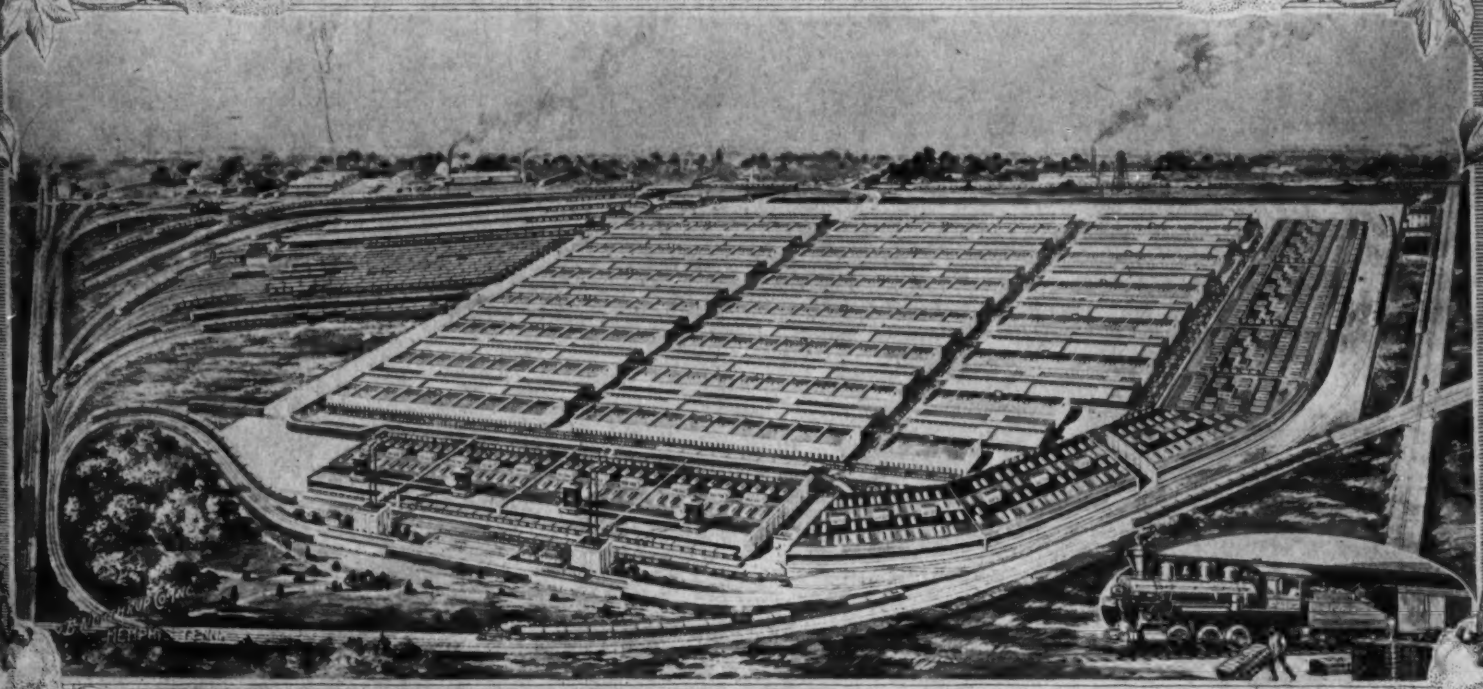
Wakefield & Company

COTTON MERCHANTS

Memphis, - - Tennessee

SOUTH MEMPHIS PLANT MEMPHIS TERMINAL CORPORATION

MEMPHIS, TENN. U. S. A.



COVERS 176 ACRES. OWNES AND OPERATES 10 MILES STANDARD RAIL ROAD ON IT'S PREMISES. WAREHOUSES ARE OF REINFORCED CONCRETE, FIRE PROOF AND SPRINKLED THRU OUT. ENJOYS CHEAPEST RATES OF INSURANCE.

CODES
MEYER'S 39th
SHEPPERSON'S '78-'15
A. B. C. 5th.

CABLE ADDRESS
"AIKEN" MEMPHIS

Warwick Aiken & Co.

COTTON MERCHANTS
806-12 McCall Bldg.

MEMPHIS, TENN.

Boston, Mass.,
112 Water St.,
Lester L. White, Mgr.

Covington, Tenn.
Brownsville, Tenn.
Mason, Tenn.
Como, Miss.
Senatobia, Miss.

Sardis, Miss.
Holly Springs, Miss.
New Albany, Miss.
Blytheville, Ark.

Mississippi, Arkansas and Tennessee Cotton of superior quality for American Mills and Export

F. L. PAGE & COMPANY

COTTON

EXPORT AND DOMESTIC

432 Falls Building

MEMPHIS, : : : : TENN.

CABLE ADDRESS "PAGE"

HOTEL GAYOSO

MEMPHIS

Headquarters for

HOTEL CHISCA

MEMPHIS

Planters—Buyers—Spinners

PEABODY HOTEL

MEMPHIS

Cotton of all Grades and Lengths

CABLE ADDRESS:
"BARNWELL" MEMPHIS

ESTABLISHED 1886

BARNWELL & COMPANY

104 S. FRONT ST.

Memphis, - Tenn.

DOMESTIC AND EXPORT

COTTON SHIPPERS

SELECTING BENDERS and STAPLES A SPECIALTY

W. M. HANNAY & CO.

Cotton Buyers and Exporters

Head Office:

MEMPHIS, TENN.

SAVANNAH DALLAS NEW ORLEANS MONTREAL NEW YORK BOSTON

P. STENNING COATE, Pres. B. G. WEST, Jr., Vice-Pres. C. P. STANLEY, Sec-Treas.

MEMPHIS F. O. B. COTTON COMPANY

COTTON MERCHANTS

10 NORTH FRONT STREET MEMPHIS, TENNESSEE

Cable Address: F. O. B. Memphis, P. O. Box No. 300.
Codes: Meyer's 39th and 40th; Shepperson's 78th.
Telephones: Local 1782; L. D. 9823; Mackay 123.

MISSISSIPPI :: ARKANSAS :: TENNESSEE

EXECUTIVES and men in charge of Production find in COTTON practical data and suggestions invaluable in the operation of cotton, knitting, dyeing, bleaching and finishing mills, with complete reports of mill conditions and reviews of the cotton, knit goods and yarn markets.

These are some of the reasons the majority of the executives read COTTON regularly.

Subscription Price $1.00 per year.

Foreign subscriptions, including postage, $2.00 per year.

COTTON

America's Largest Textile Monthly

Atlanta, Ga. :: U. S. A.

GALVESTON

THE WORLD'S GREATEST COTTON PORT

The Stone Forwarding Corporation

(INCORPORATED)

No. 220 21st St.

GALVESTON, TEXAS

CODES: Sheppersons—1878—91—1915

Our record for the prompt forwarding of cotton shipments and the expeditious handling of shipping documents is unsurpassed.

SERVICE IS OUR WATCHWORD

Ocean space engaged and freight rates quoted on all steamers sailing from Galveston, Texas City and Houston

The only forwarding agents who maintain a regular force that personally sees your cotton and watches its delivery. Our "outside men" are our clients' personal representatives.

P. G. Pauls & Co.

ESTABLISHED 1892

COTTON

EXPORTERS AND SHIPPERS

DEALERS IN

Texas and Oklahoma Cotton

ALL COTTON IS RECLASSED, STAPLED, REWEIGHED, AND EXAMINED IN GALVESTON BEFORE IT IS SHIPPED, ASSURING UNIFORM OUTTURNS.

GALVESTON, TEXAS

CODES
DOMESTIC:
SHEPPERSON'S 1878-1881-1915
FOREIGN:
MEYER'S 39th AND 40th

MEMBERS OF
GALVESTON COTTON EXCHANGE
HOUSTON COTTON EXCHANGE
TEXAS COTTON ASSOCIATION

Cable Address
PAULSCO.

HARRISS, IRBY & VOSE

COTTON MERCHANTS

BUYERS : : : EXPORTERS

New York Office, 15 Williams St.
Boston, ... Mass.
Savannah, ... Ga.
New Orleans, ... La.
Galveston, ... Texas

ALSO OFFICES THROUGHOUT EUROPE

E. S. FLINT & CO.

"COTTON"

Galveston, Texas. Savannah, Ga

Cable Address:
"LAMMFLINT"

GALVESTON-GENOA LINE

Regular Steamer Service to Genoa and other Italian and French Mediterranean Ports

A. R. Campbell & Company

GALVESTON, TEXAS

Gulf-Liverpool-Havre Lines

REGULAR SERVICE
[Galveston to Liverpool and Havre]

S. Sgitcovich & Co., Inc.

Managers and Operators
GALVESTON, TEXAS

GALVESTON, TEXAS

The greatest Cotton Port in the World

	GALVESTON	NEW ORLEANS	SAVANNAH	NEW YORK	CHARLESTON
1909	3,255,825	1,927,931	921,739	423,193	82,759
1910	2,114,158	1,232,641	776,457	596,741	116,006
1911	2,689,981	1,517,277	896,197	889,376	125,985
1912	3,673,394	1,595,916	1,786,580	674,220	249,864
1913	3,876,936	1,355,347	839,064	579,185	224,721
1914	3,347,675	1,710,503	1,515,402	430,201	309,088
1915	3,853,174	1,522,875	1,468,915	418,538	254,419
1916	1,953,510	1,165,238	531,717	680,887	87,202
1917	1,862,236	1,143,843	542,501	823,156	23,533
1919	791,338	725,888	668,564	901,677	*203,879
1919	1,574,000	1,288,000	718,000	652,000	15,000
1920	1,949,594	1,348,677	1,178,994	200,791	143,008
Total Exports	30,941,821	16,534,136	11,844,130	7,269,965	1,835,464

**Cotton receipts—exports not tabulated.*

The storage facilities at Galveston can house over ***a million bales on end.*** Cotton stored in Galveston is immediately available for shipside delivery and can be weighed and inspected just prior to shipment, thus obviating claims from abroad.

For any information concerning cotton handling at this port address:

The Cotton Concentration Co.

The largest concentrators of cotton in the south.

Galveston, Texas

INTERNATIONAL MERCANTILE MARINE CO.

LEYLAND LINE

OF STEAMERS

First-Class Liner Insurance Guaranteed

New Orleans, Galveston and Houston to Liverpool

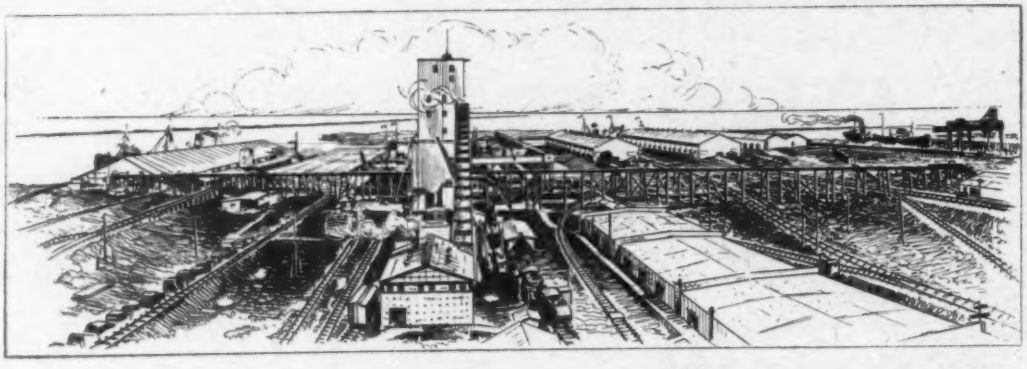
AND CONTINENTAL PORTS

For Freight, Passage, Etc., Apply to

J. A. HICKEY, Mgr., Exchange No. 3400

Office: Cotton Exchange Building, Corner 21st and Mechanic **GALVESTON, TEXAS**

Port of Texas City, Texas



"Interesting to Exporters and Steamship Companies"
Steamship Service to World Ports
45 Minutes Steaming to the Gulf
Largest American Port in Sulphur Exports
Specially Equipped Oil Facilities for Bunkering Vessels
6800 linear feet of Improved Water Frontage, accommodating 15 Ocean-going Vessels loading at same time
30 Feet of Water
Grain Exports approximate 2,000,000 Bushels per month
One of America's Largest Cotton Ports
Modern storage facilities to accommodate 100,000 Bales of Cotton
Large Oil Terminals served by Pipe Lines
Advantageous Shipside Industrial Sited which means Substantial Saving in Transportation Costs
A Port where Charges running against Vessels are Low and Attractive to Owners or Operators

For further information, write, wire, phone or cable.

Texas City Terminal Company

Mr. E. A. Bynum,
Vice-President & Gen. Mgr.,
Texas City, Texas.

Mr. T. R. Hancock,
Traffic Manager,
Galveston, Texas.

ANDERSON, CLAYTON & COMPANY

Cotton Merchants

Oklahoma City
Houston

Savannah
Atlanta

New Orleans
Boston

Anderson, Clayton & Fleming

35 SOUTH WILLIAM STREET
NEW YORK, N. Y.

MEMBERS:
New York Cotton Exchange
New Orleans Cotton Exchange

ASSOCIATE MEMBERS
Liverpool Cotton Association, Ltd.

HENRY BEER
EDGAR H. BRIGHT
J. WILLIAM BARKDULL
C. MORGAN ABRAMS

Established 1872

PRIVATE WIRES TO NEW YORK, CHICAGO AND INTERMEDIATE POINTS

H. & B. BEER

COMMISSION MERCHANTS

325 BARONNE STREET

NEW ORLEANS, - LA.

Cotton, Stocks, Bonds, Grain, Provisions, Cotton Seed Oil, Sugar and Coffee

Members of New Orleans Cotton Exchange
N. O. Future Brokers' Association
New York Produce Exchange
New York Stock Exchange
New York Cotton Exchange
N. Y. Coffee & Sugar Exchange, Inc.
Chicago Board of Trade

Associate Members of Liverpool Cotton Association

Special attention given to the execution of orders on the above exchanges.

SYLVAN NEWBURGER JOSEPH NEWBURGER H. M. RANKIN

SILVAN NEWBURGER & CO.

COTTON MERCHANTS AND EXPORTERS

Staples and Benders a Specialty

839 GRAVIER STREET

NEW ORLEANS

BRANCH OFFICES

SAVANNAH, GA.
CLARKSDALE, MISS.
GREENWOOD, MISS.
ITTA-BENA, MISS.
RULEVILLE, MISS.
YAZOO CITY, MISS.
LAUREL, MISS.
CALEXICO, CAL.
OKLAHOMA CITY, OKLA.
MONROE, LA.
HELENA, ARK.
FALL RIVER, MASS.
NEW BEDFORD, MASS.
LIVERPOOL, ENGLAND.

MEMBERS

NEW ORLEANS COTTON EXCHANGE
NEW YORK COTTON EXCHANGE
DALLAS COTTON EXCHANGE
NEW ORLEANS COTTON FUTURE BROKERS' ASSN.

ASSOCIATE MEMBERS

LIVERPOOL COTTON BROKERS' ASSN.

CABLE ADDRESS—*NEWLE*

Frederick Leyland & Company, Limited

LEYLAND LINE

NEW ORLEANS, LA.

SAILINGS FOR

LIVERPOOL
MANCHESTER
LONDON

M. J. SANDERS,
Manager,
1210 Hibernia Bank Bldg.

F. T. DeCOCK,
Sou. Pass. Mgr.,
709 Gravier St.

ESTABLISHED 1865

M. LEVY & SONS

Cotton Commission Merchants

830 & 832 Gravier Street

NEW ORLEANS, LA.

Weatherford, Crump & Co.

COTTON MERCHANTS

and

EXPORTERS

Main Offices U. S. A.

Houston New Orleans Savannah

Europe
Main Offices

Milan Bremen

and Agencies Great Britain and throughout Continent

Members

New York Exchange

New Orleans Exchange

Houston Exchange

Associate Members

Liverpool Cotton Association

Cable Address, "Weathford"

ESTABLISHED 1874

H. & C. NEWMAN, Inc.

COTTON

Domestic and Export

917, 919, 921 Gravier Street,

New Orleans, La.

C. P. ELLIS. C. P. ELLIS, JR. R. M. ELLIS. J. E. LECLE'RE

C. P. ELLIS & CO.

(ESTABLISHED 1880)

COTTON COMMISSION MERCHANTS

MEMBERS

NEW ORLEANS COTTON EXCHANGE
NEW YORK COTTON EXCHANGE
NEW YORK COFFEE AND SUGAR EXCHANGE
NEW ORLEANS COTTON FUTURE BROKERS ASSOCIATION
NEW ORLEANS STOCK EXCHANGE

ASSOCIATE MEMBERS
LIVERPOOL COTTON ASSOCIATION

NEW ORLEANS, LA.

S. GEISSLER & COMPANY

EXPORTERS

302-303 Vincent Building,

NEW ORLEANS, LA., U. S. A.

We specialize in Lowgrade Staples, Spinnable Linters, Peeler Combers and Strips.

Cable Address:—LINTGEIS, New Orleans, La.

Codes:—ABC 5th, Meyers 39th, Shepperson 78-81.

JNO. F. CLARK & CO.

NEW ORLEANS, LA.
824-826 GRAVIER STREET

NEW YORK CITY
144 PEARL STREET

MEMPHIS, TENN.
FALLS BUILDING

COTTON (SPOTS AND FUTURES) STOCKS, BONDS, GRAIN, PROVISIONS, COFFEE, SUGAR AND COTTON-SEED OIL

MEMBERS

New Orleans and New York Cotton Exchanges
Chicago & New Orleans Boards of Trade
New Orleans Future Brokers Association
New York Coffee and Sugar Exchange
New York Produce Exchange

CABLE ADDRESS:
RUSSCLARK

PRIVATE WIRES

BETWEEN NEW ORLEANS, NEW YORK, CHICAGO, MEMPHIS AND PRINCIPAL POINTS OF COTTON BELT.

J. D. HAYWARD & SONS

COTTON BROKERS

826 COMMON STREET

NEW ORLEANS

J. D. HAYWARD
J. D. HAYWARD, JR.
ASHTON H. HAYWARD

MEMBERS OF
NEW ORLEANS COTTON EXCHANGE
NEW ORLEANS FUTURE BROKERS ASSOCIATION

ASSOCIATE MEMBERS
LIVERPOOL COTTON EXCHANGE

Member
N. O. Cotton Exchange
N. O. Spot Association

JAMES BUTLER McGEE

AGENCY COTTON BROKER

NEW ORLEANS, LOUISIANA

Established 1859

W. B. THOMPSON & CO.

COTTON FACTORS

Commission Merchants and Stave Factors

808 Perdido Street, NEW ORLEANS, LA

"STRACHAN LINE"

Strachan Shipping Company

SAVANNAH, GEORGIA

Steamship and Freight Brokers

Forwarding Agents

Cable Address: "Strachan"

Codes:
Watkin's, Scott's A. B. C., Shepperson's Cotton Code 1881 Edition

Offices at
SAVANNAH, GA.
BRUNSWICK, GA.
CHARLESTON, S. C.
JACKSONVILLE, FLA.
FERNANDINA, FLA.

NEW YORK OFFICE,
61 Broadway

Services by
Direct Steamers to
UNITED KINGDOM
CONTINENTAL
MEDITERRANEAN
ADRIATIC
BALTIC and
SCANDINAVIAN
PORTS

WILLIAMSON & RAUERS CO.

SAVANNAH, GA.

Steamship Chartering and Forwarding Agents

Direct Steamers to U. K. and Continent

Cable Address: "WILLIAMSON"

Codes:
Watkins, A. B. C. 5th Ed., Scotts 1906, Watkins Universal Shipping 1904

MITTELL COTTON CO.

COTTON

Uplands **Domestic**
Staples **Export**

SAVANNAH GEORGIA

STRAUSS & CO.

COTTON MERCHANTS AND BROKERS

OFFICES:
Empire Buildings

SALE ROOM:
City Buildings, Old Hall Street
LIVERPOOL, ENGLAND

Special Attention Given to Orders for "Futures"

RAVENSCROFT & CO.

SAVANNAH, GEORGIA GALVESTON, TEXAS
ATLANTA, GEORGIA

CABLE ADDRESS:
"STRAUSS" LIVERPOOL "STRAUSS" GALVESTON
"STRAUSS" SAVANNAH "STRAUSS" ATLANTA

E. M. HANNAY & CO.

Cotton Buyers
and Exporters

MEMPHIS

SAVANNAH

NEW ORLEANS

DALLAS

MONTREAL

NEW YORK

BARRETT & COMPANY, Inc.

Augusta, Georgia

The Largest Cotton Factors in the World

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Banks, Etc.

The Recognized Standards of Quality
COTTON YARNS

Gray Manufacturing Co.
Arrow Mills, Inc.
Parkdale Mills, Inc.
Flint Manufacturing Co.
Arkray Mills, Inc.
Arlington Cotton Mills
Myrtle Mills, Inc.

Our Fine Yarns Make Fine Fabrics

The manufacturers of a number of America's well known textile products can vouch for the strength, uniformity, cleanliness, and better weaving and knitting qualities of our yarns.

The yarns we spin for knitting, weaving, laces and converting, are furnished in all twists on skeins, cones, tubes and warps:

30s to 80s Single and Ply Combed Peeler Right Twist. 30's to 50's Single and Ply Double Carded Peeler, Right or Reverse Twist.

20s to 60s, 2, 3, and 4 Ply, Combed Peeler, Reverse Twist.

Our products are sold direct and exclusively through our General Sales Offices:
225 Fifth Avenue at 26th Street, New York.

H. A. FLORSHEIM, Sales Manager

Long Distance Phone: Madison Sq. 3472-3

BRANCH OFFICES { Boston / Philadelphia / Chicago

GRAY DAWN QUALITY YARNS Gray Manufacturing Co. Gastonia, N.C.

ARROW MILLS COMBED YARNS GASTONIA, N.C.

MYRTLE MILLS INC. COTTON YARNS GASTONIA, N.C.

PARKDALE MILLS, Inc. PARKDALE YARNS ARE THE BEST GASTONIA, N.C.

ARLINGTON COTTON MILLS COTTON YARNS GASTONIA, N.C.

FLINT MFG. CO GASTONIA, N.C.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

WILLIAM ISELIN & CO.

COMMISSION MERCHANTS
—COTTON GOODS DEPARTMENT—
18 and 20 Thomas Street
NEW YORK

CARVER-BEAVER YARN CO.

Successors to A. D. SALKELD & BRO., Inc.
ALL NUMBERS COTTON MERINO **YARNS** ALL COLORS WOOL WORSTED
366 BROADWAY, NEW YORK

HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

LINEN YARNS

For Weaving, Knitting and all Purposes.

TURKEY RED YARNS

For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine

And Every Description of Linen Thread and Twine

115 Franklin Street, : NEW YORK

Wellington, Sears & Co.

93 Franklin Street, BOSTON 66 Worth Street, NEW YORK
PHILADELPHIA CHICAGO ST. LOUIS NEW ORLEANS SAN FRANCISCO

Cotton Goods Commission Merchants

COTTON DUCK

All Widths, Weights and Numbers

OCEANIC WIDE COTTON DUCK
26 inches to 120 inches wide

OCEANIC and SUPERIOR SAIL DUCK
22 inches and 24 inches wide

SHAWMUT HOSE and BELTING DUCK
DIXIE SHOE DUCKS
37 inches wide, 7, 7½, 8 and 9 ounce

SUPERIOR ARMY OUNCE DUCK
28½ and 36 inches wide, 7, 8, 9, 10, 12 and 15 ounce

MONARCH DOUBLE FILLING DUCK
29 and 36 inches wide, 7, 8, 9, 10 and 12 ounce

MAGNOLIA and CYPRESS SINGLE FILLING DUCK
29, 36 and 40 inches wide, 7, 8, 9, 10 and 12 ounce

AQUAPELLE and STORM KING WATERPROOF DUCK

Columbus Fine Sheetings
36 and 40 inches wide

Fairfax Crashes, *Bleached*
16 inch Plain, Twill, Huck, Fancy. 18 inch Absorbent

For the Jobbing, Manufacturing and Export Trade

J. H. LANE & CO.

334 Fourth Avenue
NEW YORK

Selling Agents for
Cotton Mill Products

BOSTON CHICAGO

COUCH COTTON MILLS

Incorporated

Executive Offices

Atlanta, Georgia

Mills at

East Point, Georgia
Greenville, South Carolina
Thomson, Georgia

Manufacturers of

Chambrays---raw stock dyed
O. D. Twills
Heavy Belting and Hose Duck
Special Fabrics

J. SPENCER TURNER CO.

56 WORTH STREET, NEW YORK

COTTON DUCK

ARMY—SAIL—WIDE

"LOWELL" TIRE FABRICS-SPECIAL DUCK

CRASHES—TWILLS—DRILLS—SATTEENS

ROPE—TWINE

COTTON YARNS

ESPECIAL ATTENTION GIVEN TO EXPORT REQUIREMENTS

CHICAGO
208 So. LaSalle St

PHILADELPHIA
M. & M. Building

BOSTON
161 Devonshire Street

HAMILTON, CANADA.
J. Spencer Turner Co. of Canada, Limited

WOODWARD, BALDWIN & CO.

43 and 45 Worth Street, New York

Selling Agents for

SOUTHERN COTTON MILLS

Manufacturing Well Known Brands of

SHEETINGS
DRILLS
DIAPER CLOTH

SHIRTINGS
DUCKS
TOWELS

For Home and Export

ALL WEIGHTS AND CONSTRUCTIONS OF PRINT CLOTHS AND FINE CLOTHS IN PLAIN AND FANCY WEAVES.

Outing Flannel and Romper Cloths
Towels and Diaper Cloths

Baltimore
St. Louis
St. Joseph

Philadelphia
San Francisco

Boston
Chicago
Shanghai, China

L. B. GOFF, *President*
K. F. WOOD, *Vice-Pres.*

B. C. CHACE, *General Manager*

E. E. LEONARD, *Treasurer*
S. E. JACKSON, *Asst. Treas.*

Crown Manufacturing Company

Pawtucket Rhode Island

Special Qualities in Combed Cotton Yarns

60,000 Spinning Spindles

Single and Ply for All Purposes from American, Egyptian and Sakelaridis Cottons

10,000 Twister Spindles

Tolar, Hart & Holt Mills

Fayetteville, N. C.

Hosiery Yarns 20s to 30s on cones

FOR NIFTY KNITTING
DOUBLE CARDED
STELLA 30'S
FROM THE CONE TO THE KNITTING MACHINE

TOLAR & HART

New York and Philadelphia
Selling Agents

WILLIAM L. BARRELL CO.

BOSTON
NEW YORK

50 Leonard St.
NEW YORK

CHICAGO
SAN FRANCISCO

COTTON DUCK

WIDE
SAIL
ARMY

SINGLE FILLING
DOUBLE FILLING
ENAMELING

WEIMAR BROTHERS

MANUFACTURERS OF

TAPES, BINDINGS AND NARROW FABRICS

2046-48 Amber Street,

PHILADELPHIA

BLISS, FABYAN & CO.

NEW YORK BOSTON CHICAGO

Selling Agents for

Androscoggin Mills
Bates Mfg. Co.
Boston Duck Co.
Columbian Mfg. Co.
Cordis Mills.
Edwards Mfg. Co.
Hill Manufacturing Co.
Otis Company
Palmer Mill
Pepperell Mfg. Co.
Thorndike Company
Warren Cotton Mills.

Otis Company—Underwear

ESTABLISHED 1872

H. & B. BEER

NEW ORLEANS

HENRY BEER EDGAR H. BRIGHT
J. WILLIAM BARKDULL C. MORGAN ABRAMS

MEMBERS OF

New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade

Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points

GEORGE S. HARRIS, President and Manager. P. E. GLENN, Secretary and Treasurer.
W. H. TURMAN, Asst. Secretary and Treasurer. E. C. PETERS, Vice-President.

EXPOSITION COTTON MILLS

ATLANTA, GA.

Manufacturers of

SHEETINGS, SHIRTINGS DRILLS, TWILLS AND SPECIALTIES

60,000 Spindles 1600 Looms

Widths, 36 inches to 66 inches

SELLING AGENTS:

Hunter Manufacturing and Commission Company

58 Worth Street New York City

WEIL BROS.,

42 COTTON EXCHANGE

NEW YORK

Orders Executed for Future Delivery

Member { N. Y. COTTON EXCHANGE / N. O. COTTON EXCHANGE

Associate Member LIVERPOOL COTTON ASSOCIATION

Established 1878

WEIL BROS.,

MONTGOMERY, ALA.

SAVANNAH, GA.
ATHENS, GA.
WINDER, GA.
TOCCOA, GA.
MONTEZUMA, GA.
AUGUSTA, GA.
COLUMBUS, GA.
AMERICUS, GA.
EUFAULA, ALA.
GREENVILLE, ALA.

NEW YORK
42 Cotton Exchange

NEW ORLEANS
311 Hicks Building

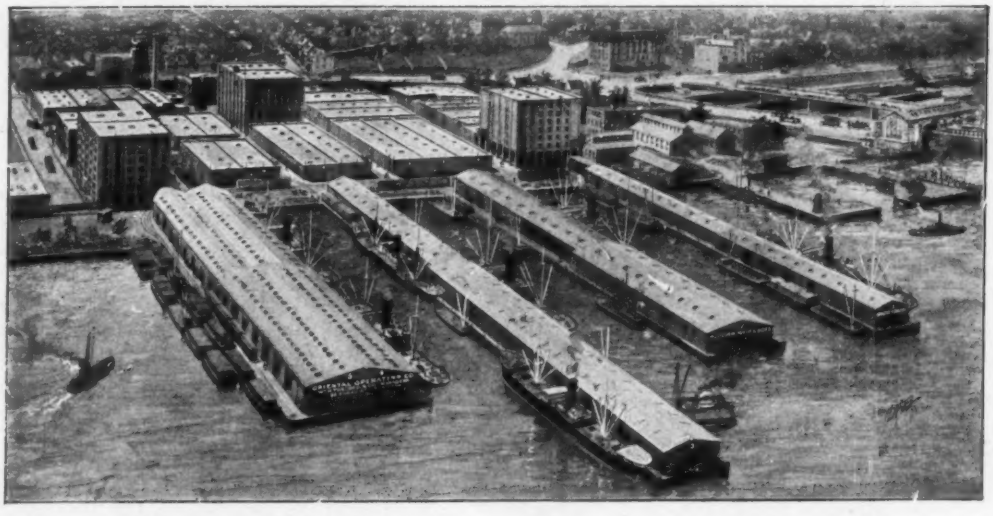
LIVERPOOL, ENGLAND
Orleans House

DECATUR, ALA.
OPELIKA, ALA.
DEMOPOLIS, ALA.
SELMA, ALA.
MOBILE, ALA.
DOTHAN, ALA.
TUPELO, MISS.
AMORY, MISS.
ABERDEEN, MISS.
NEW ALBANY, MISS.
JACKSON, TENN.

SPOT AND CONTRACT
COTTON STORAGE

Optional Service—Same Rates—Bonded Protection

Licensed by New York Cotton Exchange
Forty Years Experience
Lowest Insurance Rates



AMERICAN DOCK TERMINAL

Tompkinsville—Staten Island
City and Port of New York

Direct all rail connection with Trunk Lines independent of float or lighterage service.

Entire premises fully protected by Automatic Sprinkler System—The only plant in United States having five independent sources of water supply, creating best protection and lowest rates.

1,250,000 cubic feet of additional modern concrete storage area now under construction.

Correspondence solicited. **Service guaranteed.**

Executive Office: 17 State St., New York.

"If you are not a patron of the American Dock Terminal, you should be"

CABLE ADDRESS
WOLFALCO

ESTABLISHED
1881

A. L. WOLFF & CO.

Cotton Merchants

TEXAS AND OKLAHOMA COTTON

NEW YORK DALLAS

CODES: SHEPPERSONS 1878-81
MEYERS 39th ED.

CABLE ADDRESS: MANGET

Manget Brothers Company

SUCCESSORS MANGET-BRANNON CO.

Established 1906

Cotton Merchants and Exporters

ATLANTA, GA.

OFFICES:

Newnan, Ga.
Atlanta, Ga.
Athens, Ga.
LaGrange, Ga.
Monroe, Ga.
Conyers, Ga.
Carrollton, Ga.
Macon, Ga.
Augusta, Ga.
Little Rock, Ark.

STEELE BY-PRODUCTS CO.

INCORPORATED

DALLAS, TEX. 305-6 Slaughter Bldg. **Birmingham, Ala.** CHICAGO, ILL. 1013 Hearst Bldg.

GENERAL OFFICES

WAREHOUSES

DEALERS

Cotton By-Products

Low Grades *Loose* *Pickings*

Linters *Cotton Seed Products*

Cotton Mill Waste

Personal Inspection, Classification and Shipment. *Mail Us Samples*

WRITE US FOR TYPES AND PRICES

LEIGH ELLIS & COMPANY

Cotton

AUSTIN, TEXAS

CABLE ADDRESS "LEIGHCO"

CODES: MEYER'S 39th SHEPPERSON, 79 and 81

HOTEL TULLER

DETROIT, MICH.

600 Rooms 600 Baths

$2.50 up, Single $4.50 up, Double

Agents Sample Rooms $5.00 per day

HEADQUARTERS IN DETROIT FOR

Old Colony Club

Detroit Automobile Club

Motion Picture Exhibitors' Assn.

Detroit Transportation Club

Table d'Hote Dinner $1.50 and $1.75

Business Men's Lunch .75.

Cafe A La Carte Cafeteria Men's Grille

The Oldest National Bank

THE ATLANTA —A BUSINESS AS

It takes more than one bad year to seriously injure any section whose condition is as fundamentally sound as that of Georgia and the South.

The South is producing 41.5 per cent of the agricultural products of the entire country.

Scientific crop rotation and diversification will enable the South, before the end of the next five-year period, to produce at least one-half of the crops of the whole United States.

The 1921 crop will not be sold at prices that will compare with wartime prices, but taking into consideration the lower cost of producing it and the increased buying power of a dollar, the net profit to the farmer will be practically as great.

Georgia is essentially an agricultural state, and its prosperity is necessarily dependent to a large extent upon the prosperity of the farmer because the products of the manufacturing industries of the South are largely sold to southern farmers, as the factories are dependent upon southern farmers for raw material.

The railroad systems of the country, as a whole, are for the first time in a decade, on a sound financial and operating basis.

In the Heart of Atlanta—the Heart of the South

THE ATLANTA

Active Designated U. S. Government, State of and City

in the **Cotton States**

NATIONAL BANK

ND—

USUAL—SOON

We have passed through a national election, and business interests have a fair idea of what they may expect from the national administration for the next four years.

Our banking system has withstood the greatest credit strain in its history, and is on a sound and workable basis.

The accumulated surplus of five years of splendid prosperity is stored in many ways for continued use.

The markets of the world demand our products.

As a nation we are in a sounder financial and industrial condition than any other important nation in the world.

These are the simple, fundamental facts of our business situation, and, with everything pointing to a resumption of normal business activities within a comparatively short time, there is every reason to believe that the Atlanta National Bank was correct in its statement of some months ago, that the sane, conservative business man of the South had nothing to fear.

NATIONAL BANK

Depository for
Georgia, Fulton County
of Atlanta

BENNETT, TARLTON & COMPANY

COTTON

EXPORT DOMESTIC

AUSTIN, TEXAS

THE AMERICAN AUDIT COMPANY

100 BROADWAY, NEW YORK CITY

F. W. LAFRENTZ, C. P. A., President.

H. M. RICE, C. P. A. Vice Pres. A. F. LAFRENTZ, Secy. & Treas.

BRANCHES:

New York	Chicago	Atlanta	Boston
Richmond	Baltimore	New Orleans	Philadelphia
Washington, D. C.	Milwaukee	Scranton	London, E. C.

Our Reports of Audit and Our Certificates of Condition and Operations, Are Known and Have Weight in the Financial Centers of the World

ATLANTA BRANCH

1013 Fourth National Bank Building, Atlanta, Ga.

C. B. BIDWELL, C. P. A., Resident Vice President.

A Bank for the South's Growing Export Business

This Bank, because of its strength, resources and experience, is prepared to offer to Southern bankers and Southern exporters every facility necessary for

Moving cotton and other products to the ports
Financing foreign shipments
Handling collections and bills of exchange
Obtaining the most advantageous markets.

We are big enough to handle the banking business, foreign or domestic, of any concern in the South and can handle it directly because of our large number of banking connections within the State of Georgia and elsewhere.

We invite you to consult with us about your foreign business and other business also. You will find "C. & S." service able to meet your needs, whether large or small.

The CITIZENS *and* SOUTHERN BANK

Member Federal Reserve System

Savannah, Ga. Atlanta, Ga.
Augusta, Ga. Macon, Ga.

Resources over Fifty Million Dollars

Cooper & Griffin

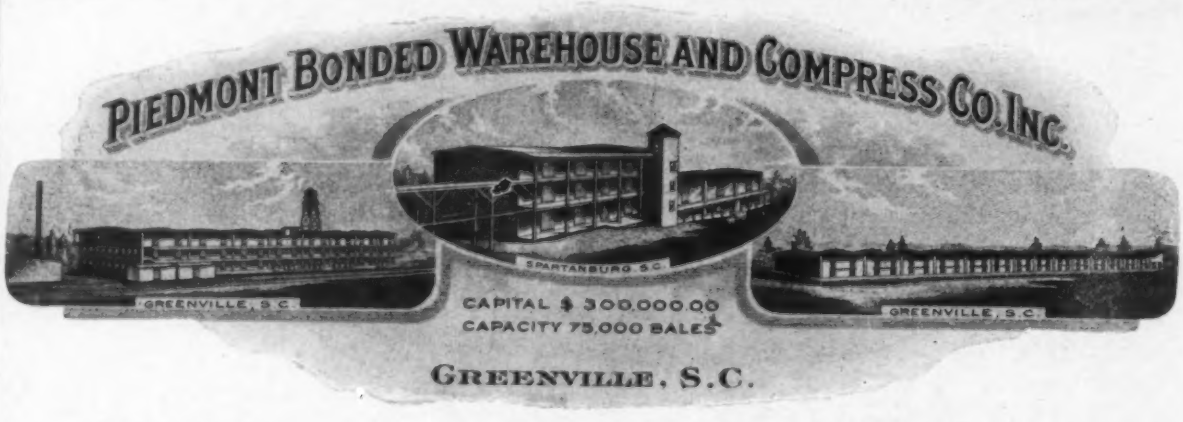
INCORPORATED

W. S. GRIFFIN, Pres. & Gen. Mgr.
WADE COTHRAN, Secy. & Treas.
W. F. JACKSON, Asst. Treas.
J. P. MANLEY, D. E. McCUEN, } Asst. Mgrs.

COTTON

OFFICES
GREENVILLE, S. C.
SPARTANBURG, S. C.
GREENWOOD, S. C.
CHARLOTTE, N. C.
SAVANNAH, GA.
TOCCOA, GA.
LAVONIA, GA.
ATLANTA, GA.

Greenville, S. C.



OVER 500,000 bales of cotton are consumed annually within a radius of 50 miles of this Warehouse.

Situated in the midst of the great Cotton Manufacturing district of the Carolinas.
Facilities for distributing Mill Cotton are unsurpassed.
Have re-shipping privileges, without additional cost, from all points throughout the Cotton States, South and West of Atlanta, Georgia.
Its receipts are well and favorably known to all Southern, Eastern and Western Banks.
Warehouses are protected with Sprinkler System, which guarantees best insurance rates.
Our rates for services rendered patrons are reasonable.
For further information, apply to

C. T. TURNER, Manager, Greenville, S. C.

TEXTILE BANKING COMPANY

50 Union Square
New York

—FACTORS—

The BANK
that is closest
to the heart of
New England Industry

The
NATIONAL SHAWMUT BANK
of Boston

Perhaps we can give you the information

The superintendent of a mill wanted a lot of special corrugated paper boxes. We told him where he could get them.

Another superintendent wanted information as to where he might obtain some 2,000 horsepower of boilers. We gave him the names of several possible sources of supply.

So it goes. This service is free to readers of COTTON. We are always glad to be of assistance in filling your wants. Our files contain the names of manufacturers and dealers in every article or supply you can possibly want.

Let us help you find the things you need. Look first through the advertising pages of COTTON, then if what you want is not advertised write us.

We promise to give you immediate service. We know that we can be of assistance to you.

Cotton, Grant Bldg., Atlanta

NATIONAL BANK OF COMMERCE 1839 IN NEW YORK

Financial Passport to Foreign Credit

Commercial Letters of Credit issued by the National Bank of Commerce in New York not only provide a means of payment but are accepted throughout the world as evidence of financial standing and responsibility.

Through them, our friends share our helpful association with the great banks of foreign countries.

National Bank of Commerce in New York

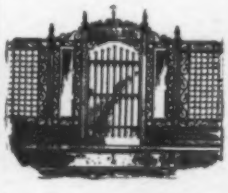
Capital, Surplus and Undivided Profits
Over Fifty-five Million Dollars

SOUTHERN BUSINESS DIRECTORY

CONSTRUCTION

American Roofing & Paint Co., Inc.
Dealers in
PAINTS, VARNISHES, STAINS,
ROOFING, ROOFING MATERIALS
Roofing Contractors——::——Painting Contractors
Office, 246 Decatur St. P. O. Box 1065
Atlanta, Ga.

Cast Iron Columns
FOR
COTTON MILL CONSTRUCTION
American Cast Iron Pipe Company
COLUMN DEPARTMENT BIRMINGHAM, ALA
NEW YORK OFFICE: 261 BROADWAY



WIRE RAILINGS
WINDOW GUARDS
WIRE CLOTH
Established 1835.
DUFUR & CO.
309 N. Howard St., Baltimore, Md.

J. E. ROBBINS & SONS
PRACTICAL WELL DRILLERS
208 W. Coffee St.
P. O. Box 87 Phone: Long Distance 2985
Greenville, S. C.

GOODE CONSTRUCTION COMPANY
GENERAL CONTRACTORS
Charlotte, N. C.

GUDE & CO., Builders
CANDLER BLDG., - ATLANTA, GA.
All classes of buildings constructed promptly and efficiently and at reasonable prices.

COTTON, WASTE, LINTERS, Etc

E. A. CUTTS C. S. CUTTS, SR.
E. A. CUTTS COMPANY
Cable Address: "CUTTS"
COTTON BROKERS
30 Bay Street, East
Savannah, Ga.
Office Phones—478—2713—Postal Phone
Long Distance—0929

WELDING & REPAIRS

SOUTHERN WELDING CO.
927 ELLIS ST. AUGUSTA, GA.
Located in the cotton manufacturing center. We make a specialty of cotton mill work. Give us your particular jobs.
Established 1911.

Advertising conserves the Manufacturer's time by acquainting him with a service or product at his leisure long before the need for such arises.

CLASSIFIED ADVERTISING

Married man 33 years old with 15 years' experience in cotton mills, office and factory, college education, desires suitable position in cost department of cotton mill. Reference can be given. Address L. T. 24, Editor of COTTON, Grant Bldg., Atlanta, Ga.

DYER AND FINISHER, experienced on piece goods, raw stock, and yarns, desires situation. Familiar with Sulphur, Direct, Wood, and Mineral Colors; and with bleaching, waterproofing, and finishing of piece goods. Address Box 35, care COTTON, Atlanta, Ga.

WANT POSITION as second hand in weave room. Fifteen years' experience on plain weaving. References furnished by present employers. Address Box 37, care COTTON, Atlanta, Ga.

FOR SALE

New Weaving Outfit, consisting of 60 Model "D" Modified Draper Looms, 44-inch reed space, individual motor drive; No. 90 Universal Winders; Standard Direct Beaming Outfit; Humidifier System; Cloth Brusher; supplies, etc.

This equipment has been used less than one year, is just like new. Everything latest type. The price is a money saver.

Also 5 New Kilburn & Lincoln Webbing Looms, weaving up to 5 inches in width.

P. O. Box 974, Atlanta, Ga.

RATES:

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

INDUSTRIAL ENGINEERING SERVICE

Industrial Engineers offer complete service in design and construction of Textile Mills, warehouses, mill villages, power plants, etc. We can assist in financing meritous enterprises. Give full particulars when writing. Box 29 care COTTON, Atlanta, Ga.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,

127-31 N. Third St.

Philadelphia, - Pennsylvania

New Material at Salvage Prices

All the surplus equipment and supplies at the Government's $87,000,000 Old Hickory project is offered for immediate delivery at far below cost prices. All the material is new, or practically so, none having been used more than three months.

MOTORS AND TRANSFORMERS

800 Standard make, alternating current, 3 phase, 60 cycle, 220, 440 and 2300 volt motors, one-quarter to 300 H.P.

6 600-K. V. A. Westinghouse Transformers (40°C.) Outdoor Type, 60 cycle, single phase, 600-1200-2400 volt primary, 6300 volt secondary. Complete with oil. Transformers arranged with taps for starting 300 H.P., 2200 volt, 3 phase motors. Transformers on new A. I. E. E. rating at 55° C., 750 K. V. A.

27 250-K. V. A. Westinghouse Outdoor Type Transformers, 2300-460 volt, 60 cycle, single phase, Spec. No. 159463-A.

18 250-K. V. A. Allis-Chalmers Outdoor Type Transformers 2300-230/440 volt, 60 cycle, single phase.

3 100-K. V. A. Westinghouse S. K. Transformers, Outdoor Type, 6600 volt—2200/2000, 60 cycle, single phase.

CORLISS ENGINES

27 18 x 36 Heavy Duty, Allis-Chalmers Corliss Engines, both right and left hand, 125 r.p.m., 350 H.P., 11 ft. x 32 in. Band Wheel, operated on 140 lbs. steam, 1½ in. gauge back pressure, double eccentric.

BOILERS

5 500 H.P. Keeler Water Tube Boilers, 160 lb. pressure. Wetzel stokers.

48 825 H.P. Sterling Boilers, type M-30, 200 lbs. pressure. Westinghouse S retort stokers, Vulcan soot cleaners, Bailey flow meters, forced draft fans, 100,000 of capacity direct connected to steam turbines.

PIPE AND PIPE COVERING

26,000 ft. 16 in.	6,930 ft. 7 in.
17,300 ft. 14 in.	37,920 ft. 6 in.
9,800 ft. 12 in.	13,870 ft. 5 in.
12,870 ft. 10 in.	21,600 ft. 4 in.
18,335 ft. 8 in.	68,400 ft. 3 in.

Thousands of feet of 2½ in. and smaller.

Thousands of feet of hydraulic pipe of all weights.

Thousands of feet of serviceable 85% Magnesia Covering and lagging, all sizes. Large quantity of all sizes cork covering and fittings.

TANKS

4000 Steel tanks, all sizes and shapes. 9 x 36, 8 x 36, 8 x 30 storage tanks. Weigh tanks with scales. Round storage tanks, with covers, of every size. Small tanks of every size.

2000 Wood tanks, new and used, all sizes.

PUMPS

Motor Driven Centrifugal:

10 14-in. Worthington, Class B double suction, 8,600 g.p.m. at 152 ft. head, direct connected to 300 H.P. General Electric 3 phase, 60 cycle, 2,300 volt, 1,700 r.p.m. motors.

4 14-in. Allis-Chalmers Type S 7,500 g.p.m. at 130 ft. head, direct connected to 150 H.P. General Electric 3 phase, 60 cycle, 2,300 volt motors.

2 10-in Allis-Chalmers Type S 3,750 g.p.m., 130 ft. head, direct connected to 100 H.P. General Electric 3 phase, 60 cycle, 2,300 volt motors.

2 8-in. Allis-Chalmers Type S 1,850 g.p.m., 150 ft. head, direct connected to 100 H.P., 2 phase, 60 cycle, 2,300 volt motors.

3 6-in. A. W. W. 100 g.p.m., 125 lb. pressure, direct connected to 150 H.P. Westinghouse 3 phase, 60 cycle, 3,200 volt, 1,765 r.p.m. motors.

Steam Turbine Driven Centrifugal:

6 16-in. Allis-Chalmers Type S, 8,500 g.p.m. at 90 ft. head, direct connected to Type L, 2,000 r.p.m. steam turbine.

6 14-in. Allis-Chalmers Type S, 6,500 g.p.m. at 150 ft. head, 8,100 g.p.m. at 90 ft. head, direct connected to 200 r.p.m. steam turbines.

Steam Actuated Hydraulic:

6 14 and 20 x 7½ x 18 Worthington Compound Duplex outside and pocket plunger, 400 g.p.m. at 300 lb. pressure.

10 25 and 38 x 4⅝ x 24 Worthington Tandem Compound Duplex, outside end pocket, 3,600 lb. pressure, 150 g.p.m. at 20 r.p.m.

2 20 x 12 x 16 Worthington Duplex Underwriters Fire Pumps, 1,500 g.p.m.

200 Boiler Feed Worthington Pumps, 3 x 2 x 3, 4½ x 2¾, x 5, 5½ x 3½ x 5, 6 x 4 x 6 and 12 x 7 x 10.

NASHVILLE INDUSTRIAL CORPORATION

OLD HICKORY, TENN.

Buyers' Index

Acetylene Welding Apparatus.
(See Welding Apparatus).

Acetylene Gas.
Commercial Acetylene Supply Co.
Southern Welding Co.
Standard Gas Products Co.

Accountants.
(See Auditors and Accountants).

Adding Machines.
Monroe Calculating Mch. Co.

Air Brakes.
Allis-Chalmers Mfg. Co.

Air Washers.
American Blower Co.
Carrier Eng. Corp.
Parks-Cramer Co.
Sturtevant Co., B. F.

Air Conditioning Systems.
(See Humidifying Apparatus).

Albone.
Roessler & Hasslacher Chemical Co.

Alkalies.
(See Dyestuffs and Chemicals).

Aniline Colors.
(See Dystuffs and Chemicals).

Anti-Chlornie.
(See Dyestuffs and Chemicals).

Aprons-Rub.
Smith & Furbush Machine Co.

Architects and Engineers.
Hearne System.
Lockwood, Greene & Co.
Robert & Co.
Spiker & Lose.
Sirrine, J. E.
Thompson & Binger, Inc.
Tufts Co., Arthur.

Ash Handling Machinery.
(See Coal Handling Machinery).

Asphalt Slate Shingles.
(See Slate Asphalt Roofing).

Auditors and Accountants.
American Audit Co.
Ernst & Ernst.

Auto Trucks.
(See Trucks—Auto).

Automatic Controllers (Temperature).
(See Temperature Controllers.)

Automatic Loom Attachments.
(See Loom Attachments).

Automatic Feeds for Cotton.
Proctor & Schwartz, Inc.
Saco Lowell Shops.
Sargent's Sons Corp., C. G.
Smith & Furbush Mch. Co.
Whitin Mch. Works.

Automatic Guider (Electric).
Blake Electric Mfg. Co.

Backwashers.
Sargent's Sons Corp., C. G.

Automatic Scales.
(See Scales).

Ball Bearings.
Aldrich Mch. Works.
Campbell Mfg. Co.
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
S K F Industries.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

Ball Bearing Housings.
Aldrich Mch. Works.
Fafnir Bearing Co.

Ball Bearing Top Rolls.
Campbell Mfg. Co.

Bale Band Buckles.
(See Box Strapping & Buckles).

Bale and Box Ties.
Lovingood Co.
Regnas Co., J. R.
Signode System, Inc.

Baling Machines.
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co.
Galland-Henning Mfg. Co.
Williams & Sons, I. B.
Hulme, J. S.
Saco-Lowell Shops.

Baling Presses.
(See Presses).

Bandages, Tapes, Etc.
American Textile Banding Co.

Bands.
(See Tapes).

Banding Straps and Buckles.
Lovingood Co.
Regnas Co., J. R.
Signode System, Inc.

Bands (Self-Tying).
Campbell Mfg. Co.

Banks.
Atlanta National Bank.
Citizens & Southern Bank.
Irving National Bank.
National Bank of Commerce In New York.
National Shawmut Bank.
Textile Banking Co., Inc.

Barometers (Mercurial).
Taylor Instrument Co.

Barrels—Fibre.
(See Fibre Products).

Baskets—Mill.
(See Boxes—Mill).

Bath Cabinet—Shower.
Crane Co.
Manufacturing Equipment & Engineering Co.
Sanymetal Products Co.

Batteries (Elec.).
(See Storage Batteries).

Beam Dyeing Machines.
Cocker Mchry. & Foundry Co.

Beaming and Warping Mchry.
(See Warpers and Warping Machinery).

Bearings.
Cresson-Morris Co.
Diamond State Fibre Co.
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
S K F Industries.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.
Wood's Sons Co., T. B.

Belting.
American Supply Co.
Augusta Mill Supply Co.
McLeod Leather & Belting Co.
Russell Mfg. Co.
Walraven Co.
Williams & Co., I. B.

Belting—Chain Link.
Link-Belt Company.
Morse Chain Co.

Belting—Rope.
(See Rope Transmission).

Belt Conveyors.
Link-Belt Company.
Mathews Gravity Carrier Co.
Morse Chain Co.
Portable Machinery Co.

Belt Dressing.
Jos. Dixon Crucible Co.
Walraven Co.
Williams & Co., I. B.

Belt Fasteners.
Flexible Steel Lacing Co.

Belt Lacing.
Augusta Mill Supply Co.
Flexible Steel Lacing Co.
Walraven Co.

Belt Tighteners.
Link-Belt Company.
Williams & Sons, I. B.
Wood's Sons Co., T. B.

Benches (Park and Playground).
(See Playground Equipment).

Bleacheries.
(See Dyers, Bleachers and Finishers).

Bleaching Kiers.
Butterworth & Sons Co., H. W.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Machinery Co., The.

Bleaching Machinery.
(See Dyeing, Bleaching and Finishing Machinery).

Bleaching, Finishing and Sizing Materials.
(See Finishing Materials).

Blowers and Blower Systems.
American Blower Co.
Carlisle & Gale Co.
Carrier Eng. Corp.
Clements Mfg. Co.
General Electric Co.
Perkins & Son, B. F.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

Boards—Fibre.
Diamond State Fibre Co.

Boards—Form.
Pearson, Jos. T.

Bobbins.
Draper Corporation.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.
Shambow Shuttle Co.
Walraven Co.
Whitin Machine Works.

Bobbin Heads.
Diamond State Fibre Co.

Boilers.
International Engineering Works, Inc.
Lombard Iron Works & Supply Co.
Nashville Industrial Corp.
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Boiler Feed Water Purification.
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Scaife & Sons, Wm. B.

Boiler Room Fittings & Supplies.
Crane Co.
Detroit Stoker Co.
Grinnell Co., Inc.
International Engineering Co.
Jenkins Bros.
Lunkenheimer Co.
Nashville Industrial Corp.
Sherwood Mfg. Co.
Wright-Austin Co.

Boiler Grates and Stokers.
(See Grates and Stokers).

Boiler Graphite.
Jos. Dixon Crucible Co.

Bookkeeping Machines.
Monroe Calculating Mch. Co.

Box Strapping and Tie Buckles.
(See Banding Straps & Buckles).

Boxes—Mill.
Diamond State Fibre Co.
Hightower Box & Tank Co.
Keystone Fibre Co.
Lane & Bros., W. T.
Standard Fibre Co.

Boxes—Packing.
(See Packing Boxes).

Braid.
(See Tapes).

Brake Linings.
Diamond State Fibre Co.

Brazing.
(See Welding).

Brokers—Cotton.
(See Cotton Dealers & Brokers).

Brokers—Stock.
(See Stocks and Bonds).

Brooms.
(See Brushes.

Brushes—Mill.
Atlanta Brush Co.
Southern Brush & Broom Co.

Brushes—Commutator.
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Buckets and Pails—Mill.
Keystone Fibre Co.
Standard Fibre Co.

Buckets—Elevator and Grab.
Link-Belt Company.

Buckles—Cotton Tie.
(See Box Strapping and Ties).

Building Contractors.
(See Contractors).

Buildings—Portable.
Seawell, Luke.

Building Material.
American Cast Iron Pipe Co
American Roofing & Paint Co.
Anchor Post Iron Works.
Atlantic Drier & Varnish Co.
Barrett Co., The.
Birmingham Slag Co.
Detroit Graphite Co.
Detroit Steel Products Co.
Dowman, Geo.
Dufur & Co.
Grinnell Co., Inc.
Kirkpatrick Lumber & Timber Co.
Lockwood, Green & Co.
Lupton's Sons Co., David
Sanymetal Products Co.
Seawell, Luke.
Southern Cotton Oil Co.
Southern Cypress Mfg. Asso.

Bungalows.
(See Houses—Ready Built).

Burr Pickers.
Sargent's Sons, C. G.
Smith & Furbush Machine Co.

Bushings.
Diamond State Fibre Co.
Southern Spindle & Flyer Co.
Shambow Shuttle Co.
Walraven Co.

Cabinets.
(See Lockers).

Cafeteria Equipment.
Pick & Sons, Albert.

Calculating Machines.
Monroe Calculating Mch. Co.

Calenders.
Butterworth & Sons Co., H. W.
Textile Finishing Machinery Co.

Calender Rolls.
Campbell Mfg. Co.
Butterworth & Sons Co., H. W.
Roy & Son, B. S.
Perkins & Son, Inc., B. F.
Textile Finishing Machinery Co.

Calling System—Inter-Telephone.
Carter Electric Co.

Cans—Roving.
Carter, A. B.
Diamond State Fibre Co.
Keystone Fibre Co.
Standard Fibre Co.

Canvas Lugs.
Augusta Mill Supply Co.

Cars and Trucks—Fibre.
(See Trucks).

Car Unloaders.
Portable Machinery Co.

Carbonizing Machines.
Cocker Mch. & Fdry Co.
Klauder-Weldon Dyeing Mch. Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Salem Iron Wks.
Sargent's Sons & Co., C. G.
Textile Finishing Machinery Co., The.
Tolhurst Mch. Wks.

Carding Machinery and Supplies.
Howard Bros. Mfg. Co.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Clothing.
Howard Bros. Mfg. Co.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Whitin Machine Co.

Factory, Warehouse and Office Receptacles

TAPER BASKETS
WASTE BASKETS
OVAL CANS
GILL CANS
BARRELS

Get the FACTS

CONCERNING

Our NEW TYPE Trucks and Boxes

YOUR NEXT ORDER SHOULD SPECIFL "CONTINUOUS STEEL AND BOTTOM CORNER CONSTRUCTION;"

No-Waste SEAMLESS ROVING CANS

IN SIX DIFFERENT DIAMETERS AND TWO STYLES OF TOP RIM.

STANDARD FIBRE CO.

MILLER STREET SOMERVILLE, MASSACHUSETTS

SEABOARD AIR LINE RAILWAY COMPANY

THREE TRAINS DAILY PULLMAN CARS AND DINING CARS ON ALL TRAINS

***Between* ATLANTA AND BIRMINGHAM**

WESTBOUND

Lv. Atlanta .....8:10 A.M.— 4:40 P.M.—1:00 A.M.
Ar. Birmingham .....1:40 P.M.—10:40 P.M.—7:50 A.M.
Sleeping cars to Birmingham on 1:00 A.M. Train ready for occupancy 9:00 P.M.

EASTBOUND

Lv. Birmingham ..... 6 15 A.M.—2:15 P.M.—1:30 A.M.
Ar. Atlanta .....11:45 A.M.—8:15 P.M.—7:55 A.M.
Sleeping cars to Atlanta on 1:30 A.M. Train ready for occupancy 9:00 P.M.

Best Service Between Atlanta and Memphis.

Lv. Atlanta .....4:40 P.M. Arrive Memphis .. 7:35 A.M. Lv. Memphis .....8:45 P.M. Arrive Atlanta ...11:45 A.M.

FRED GEISSLER, Asst. General Passenger Agent, Atlanta, Ga.

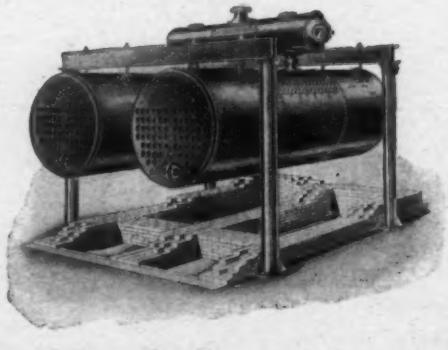
P. B. HAMPTON, District Passenger Agent,
R. E. CAMP, Traveling Passenger Agent,
Citizens & Southern Bank Building, ATLANTA, GA.

H. E. PLEASANTS, District Passenger Agent,
Woodward Building, BIRMINGHAM, ALA.

ATLANTA
City Ticket Office: 18 Walton Street
Phones Ivy 6127 and 6128
Terminal Station: Phone Main 1149

GET TICKETS AND MAKE RESERVATIONS

BIRMINGHAM
City Ticket Office: 2010 First Avenue.
Phone Main 7572
Terminal Station: Phone Main 1126



BOILERS TANKS

STEEL CASINGS

BOILER REPAIRS

The Walsh & Weidner Boiler Co.

CHATTANOOGA, TENN.

BRANCH OFFICES—New York, Havana, New Orleans, San Francisco, Memphis, Jacksonville

BUYERS' INDEX—Continued.

Card Grinding Machinery.
Roy & Son Co., B. S.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Carpet Machinery.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Wks.
Proctor & Schwartz, Inc.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

Carrier Aprons.
(See Aprons).

Carrier System.
Mathews Gravity Carrier Co.

Cases—Wooden.
(See Boxes).

Casement Window Hardware.
Richards-Wilcox Mfg. Co.
Seawell, Luke.

Castings.
American Cast Iron Pipe Co.
Cresson-Morris Co.
Lombard Foundry & Mch. Co.
Walsh & Weidner Boiler Co.

Cast Iron Columns.
American Cast Iron Pipe Co.

Caustic Soda.
(See Bleaching Materials).

Cement Machinery.
Allis-Chalmers Mfg. Co.

Cement Reinforcement.
Birmingham Slag Co.

Cement and Brick Coating.
Cooledge & Sons, F. J.
Dixon Crucible Co., Jos.
Peaslee-Gaulbert Co., Inc.
Patterson-Sargent Co.
Tropical Paint Co.
Wadsworth Howland & Co., Inc.

Centrifugals.
Cresson-Morris Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Mch. Wks.

Chain Drives.
(See Belting—Chain Link).

Chain—Block, Bicycle Auto, Engine, Agricultural, Etc.)
Morse Chain Co.

Chairs and Stools.
Manufacturing Equipment & Engineering Co.
Monarch Theatre Supply Co.
Southern Theatre Equip. Co.

Chamber of Commerce.
Memphis Chamber of Commerce.

Chemicals.
(See Dyestuffs and Chemicals).

Chlorine Gas.
Electro Bleaching Gas Co.

Cleaning Machine—Blower.
Clements Mfg. Co.

Clocks—Hank, Etc.
(See Counters).

Clocks—Time.
Eco Clock Co.
Service Recorder Co.

Clocks—Watchman.
Eco Clock Co.
Chicago Watchman Clock Co.

Closets—Water.
(See Toilets).

Cloth Cutters.
Firsching, J. A.
Wildman Mfg. Co.

Cloth Guider (Electric).
Blake Electric Mfg. Co.

Cloth Room Machinery.
Butterworth, H. W., & Sons Co.
Firsching, J. A.
Saco-Lowell Shops.
Scott & Co., Henry L.
Textile Finishing Machinery Co.
Wildman Mfg. Co.

Cloth Shrinking Machinery.
Reliance Machine Works.
Tolhurst Mch. Wks.

Cloth Testers.
Scott & Co., Henry L.

Cloth Winders.
(See Winders).

Clutches—Friction.
Carlyle-Johnson Machine Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Wood's Sons Co., T. B.

Clutch Linings.
Diamond State Fibre Co.

Coal.
U. S. Fuel Corp.

Coal & Ash Handling Machinery.
Link-Belt Company.
Portable Machinery Co.

Coal Tar Disinfectants.
(See Disinfectants).

Cocks.
(See Valves).

Color Pails.
(See Buckets—Mill).

Color Testers.
Atlas Electric Devices Co.

Comb Aprons.
(See Aprons).

Commission Merchants & Dealers.
(See Cotton Cloth Commission Merchants).

Compressors—Air.
Allis-Chalmers Mfg. Co.
General Electric Co.
Walraven Co., The.

Concrete Reinforcement.
Birmingham Slag Co.

Condensers.
Allis-Chalmers Mfg. Co.

Conduits.
Diamond State Fibre Co.
National Metal Molding Co.

Conduletes.
Crouse-Hinds Co.
National Metal Molding Co.

Connectors—Frankel Solderless.
Westinghouse Elec. & Mfg. Co.

Consulting Engineers.
(See Architects and Engineers).

Contractors and Engineers—Building.
Fonda Organization, The E. A.
Goode, R. L.
Gude & Co.
Hearne System.
Robbins & Sons, J. E.
Solker & Lose.
Thompson & Binger.
Tufts Co., Arthur.

Contractors—Electrical.
(See Electrical Engineers.

Contractors—Painting.
American Roofing & Paint Co.
Marshall Co., H. Newton.

Contractors (Piping.)
Marshall Co., H. Newton.

Contractors (Roofing.)
American Roofing & Paint Co.
Marshall Co., H. Newton.

Controlling Instruments—Temperature.
General Electric Co.
Powers Regulator Co.
Taylor Instrument Co.

Conveyors—Belt.
(See Belt Conveyors).

Conveying Machinery.
American Supply Co.
Collins, J. D.
Cresson-Morris Co.
Hulme, J. S.
Link-Belt Co
Mathews Gravity Carrier Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Portable Machinery Co.
Richards-Wilcox Mfg. Co.
Schofield, Wm. Co.
Standard Conveyor Co.
Walraven Co.

Conveyors—Portable.
Portable Machinery Co.

Coolers.
(See Humidifying Apparatus.)

Coolers—Water.
(See Water Coolers).

Cooling and Conditioning Machines.
Manufacturers Machine Co.

Cooling Towers.
(See Tanks and Towers).

Copper Stamps and Stencils.
(See Stamps, Stencils, Etc.)

Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

Cotton Forwarders & Shippers.
Cotton Concentration Co.
Stone Forwarding Corp.
Williamson & Rauers Co.

Cotton Growers.
Delta & Pine Land Co.

Cotton Yarn and Cloth Commission Merchants and Dealers.
Barrell Co., Wm. L.
Bliss Fabyon & Co.
Carver-Beaver Yarn Co., Inc.
Fawcett, Hughes.
Florsheim, H. A.
Hunter Mfg. & Comm. Co.
Iselin & Co., Wm.
Lane & Co., J. H.
Tolar & Hart.
Turner Co., J. Spencer
Weimar Bros.
Wellington, Sears & Co.
Woodward Baldwin & Co.

Cotton Merchants and Brokers.
Anderson, Clayton & Co.
Barnwell & Co.
Barrett & Co.
Beer, H. & B.
Bennett Tarlton & Co.
Cutts, E. A.
Clark & Co., John F.
Cooper & Griffin
Ellis & Co., C. P.
Flint & Co., E. S.
Geissler & Co., S.
Goold & Co.
Hannay & Co., W. M.
Harris, Irby & Vose
Hayward & Sons, J. D.
Leigh, Ellis & Co.
Levy & Sons, M.
Manget Bros. Co.
McGee, James Butler
Memphis F. O. B. Cotton Co.
Mittell Cotton Co.
Newberger & Co., Silvan
Newman, Inc., H. & C.
Page & Co., F. L.
Pauls & Co., P. G.
Steele By-Products Co.
Strauss & Co.
Thompson & Co., W. B.
Wakefield & Co.
Warwick-Aiken & Co.
Weatherford, Crump & Co.
Weil Bros.
Wilson, Nabors & Pape, Inc.
Wolff & Co., A. L.

Cotton Mills.
Couch Cotton Mills, Inc.
Crown Mfg. Co.
Exposition Cotton Mills
Gray Mfg. Co.

Cotton Mill Machinery and Supplies.
Augusta Mill Supply Co.
Barber-Colman Co.
Blake Electric Mfg. Co.
Boston Machine Works Co.
Butterworth & Sons, H. W.
Carter, A. B.
Cocker Mach. & Foundry Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Eclipse Textile Devices, Inc.
Firsching, J. A.
Fletcher Works.
Foster Machine Co.
Greist Mfg. Co.
Greenville Spool & Mfg. Co.
Hopedale Mfg. Co.
Howard Bros. Mfg. Co.
Howard & Bullough.
Hunt Automatic Stop Motion, Inc.
Manufacturers Machine Co.
Mason Machine Works.
Phila. Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Service Recorder Co.
Shambow Shuttle Co.
Slaughter Mchry. Co., G. G.
Smith & Furbush Mach. Co.
Southern Bending Co.
Stafford & Co.
Steel Heddle Mfg. Co.
Terrell Machine Co.
Textile Finishing Machinery Co.
Tolhurst Mch. Wks.
Universal Winding Co.
Walraven Co.
Ward Compressing Mach. Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

Cotton Tape Loom.
Fletcher Works.
Schaum & Uhlinger.

Cotton Terminals & Warehouses.
American Dock Terminal
Memphis Terminal Co.
Piedmont Bonded Warehouse & Compress Co.
Pouch Terminal, Inc.
Texas City Terminal Co.

Cotton Yarn Mills.
(See Yarn Manufacturers).

Counters—Revolution, Hank, Pick, Etc.
Boston Machine Works.
Slaughter, G. G.

Counters (Time).
Service Recorder Co.

Counters—Restaurant.
(See Restaurant Equipment.)

Coupling—Shaft.
Cresson-Morris Co.
Wood's Sons Co., T. B.

Covers—Rollers.
Diamond State Fibre Co.

Cranes.
(See Hoists).

Cravons.
Dixon Crucible Co., Jos.
Lovingood Co.
Lowell Cravon Co.
Regnas & Co., J. R.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cutters—Cloth.
(See Cloth Cutters).

Cypress Lumber.
Southern Cypress Mfg. Asso.

Cutters—Thread.
(See Thread Cutters).

Dehumidifying.
Sturtevant Co., B. F.

Delivery Cases.
(See Boxes—Packing).

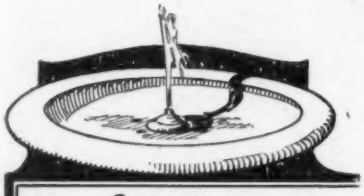
Dial Scales.
(See Scales).

Dies—Steel.
(See Stamps, Stencils, Etc.).

Discs—Fibre.
Diamond State Fibre Co.

Dishes and Glassware.
Pick & Sons, Albert.

YOUR DRINKING WATER IS GUARANTEED *CLEAN* WHY NOT YOUR AIR?



Guaranteed Board of Health

You wouldn't expect your workers to drink impure water, would you? Then how can you ask them to breathe impure air—air laden with the dust and germs and odors of production wastes?

SANITAS

"Guaranteed Products"

The use of SANITAS Coal Tar Disinfectants guarantees Clean Air. SANITAS Coal Tar Disinfectants are sold on the basis of their strength in comparison with Carbolic Acid—and their strength is guaranteed *in writing*.

Use these powerful—but pleasant—disinfectants wherever soap and water are used. Soap and water clean the surfaces but SANITAS Coal Tar Disinfectants kill the germs of disease, and make your mill *safe* for the health of your workers.

FREE BOOKLET

Before you forget it, write us for "Disinfectant Facts for the Practical Buyer." You'll be mighty interested in this complete manual on disinfection.

THE SANITAS COMPANY Inc.

33 KEAP STREET BROOKLYN, N.Y.

"Guaranteed SANITAS *Products"*

UNITED PRODUCTS

AMERICAN MADE — UCPC — PROMPT SHIPMENT

SULPHUR NAVY BLUE U. C. P.

The Best Money Value Colors

SULPHUR BLACKS JET OR BLUE SHADES

VELVETEEN

THE MOST EFFICIENT AND ECONOMICAL BOIL-OFF OR FINISH FOR RAW STOCK OR WARPS

United Chemical Products Corporation

Importers, Exporters and Manufacturers

York & Colgate Sts., Jersey City, N. J.

INQUIRIES SOLICITED

Southern Office, Realty Bldg., Charlotte, N. C.

Representatives:

R. T. GRANT, Charlotte, N. C.

BUYERS' INDEX—Continued.

Disinfectants.
Barrett Co., The
Sanitas Co.

Dobby Chains.
Crompton & Knowles Loom Wks.
Whitin Machine Works.

Doffing Boxes—Mill.
(See Boxes—Mill).

Doffing Cars.
(See Cars).

Door Closers and Checks.
Richards-Wilcox Mfg. Co.
Seawell, Luke.

Door Hangers.
Richards-Wilcox Mfg. Co.

Door Mats—Steel.
Lovingood Co.
Regnas & Co., J. R.

Doors—Steel.
Lupton's Sons Co., David

Draft Gauges.
(See Gauges—Draft).

Drawing Frames.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Drills—Electric.
(See Electric Machinery).

Drinking Fountains.
(See Fountains—Drinking).

Drop Wires.
Greist Mfg. Co.
Steel Heddle Mfg. Co.

Drying Apparatus.
American Blower Co.
Sturtevant Co., B. F.

Drying Forms—Hosiery.
Pearson, Jos. T.

Drying Machinery.
American Laundry Mchry. Co.
Butterworth, H. W., & Sons Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

Dust Collectors.
(See Blowers and Blowing Systems).

Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
American Processing Co.
Cold Spring Textile Corp.
Franklin Process Co.
King, Habersham.
Sayles Finishing Plants, Inc.
United Piece Dye Works.

Dyeing, Bleaching, Finishing and Printing Machinery.
American Laundry Mchry. Co.
Atlas Electric Devices Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Franklin Process Co.
Hulme, J. S.
Klauder-Weldon Dyeing Mch. Co.
Manufacturers Machine Co.
Permutit Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Rome Mch. & Fdry. Co.
Salem Iron Wks.
Schaum & Uhlinger.
Textile Finishing Machinery Co The.
Tolhurst Machine Works.

Dyeing Machines (Package and Spool.)
Franklin Process Co.

Dye Sticks.
Phila. Drying Machinery Co.

Dyestuffs and Chemicals.
American Dyewood Co.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Ford Co., J. B.
Grasselli Chemical Co.
Kali Mfg. Co.
Klipstein & Co., A.
Lewis, John D.
Metz & Co., H. A.
National Aniline & Chemical Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Southern Distributing Co.
Staley Mfg. Co., A. E.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.
Zavon Co., Inc.

Electric Cleaning System—Suction.
United Electric Co.

Electric Conduit & Fittings.
National Metal Molding Co.

Ejectors.
Sherwood Mfg. Co.

Electric Dynamos and Motors.
See Motors and Generators).

Electric Fans.
(See Fans—Electric).

Electric Lamps.
(See Lamps).

Electric Lamp Guards.
Flexible Steel Lacing Co.

Electrical Engineers and Contractors.
Huntington & Guerry, Inc.

Electrical Machinery and Supplies.
Allis-Chalmers Mfg. Co.
Atlas Electric Devices Co.
Blake Electric Mfg. Co.
Carter Electric Co.
Cooper-Hewitt Elec. Co.
Crouse-Hinds Co.
Cutter Works, George.
General Electric Co.
Hulme, J. S.
National Metal Molding Co.
Slaughter Mchry. Co., G. G.
United Electric Co.
Walraven Co., The.
Walsh & Weidner Boiler Co.
Westinghouse Elec. & Mfg. Co.

Electric Tractors and Trucks.
(See Tractors & Trucks—Elec).

Elevators—Portable.
Collins, J. D.
Lovingood Co.

Elevators.
Link-Belt Company.
Mathews Gravity Carrier Co.
Standard Conveyor Co.
Westbrook Elevator Co., W. J.

Enamel—Mill White.
(See Paint).

Engineers—Mill.
(See Architects).

Engines—Oil, Gas and Gasoline.
Walraven Co., The.

Engines—Steam.
Allis-Chalmers Mfg. Co.
Lombard Iron Works & Supply Co.
Nashville Industrial Corp.
Schofield's Sons Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Engine Room Appliances and Supplies.
Crane Co.
Cutter Works, George.
Jenkins Bros.
Lunkenheimer Co.
Nashville Industrial Corp.
Slaughter Mchry. Co., G. G.
Sherwood Mfg. Co.
Walraven Co.
Westinghouse Electric & Mfg. Co.
Wright-Austin Co.

Exporters—Cotton.
(See Brokers).

Extractors—Hydro.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Fans—Electric.
Allis-Chalmers Mfg. Co.
American Blower Co.
Carter Electric Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems).

Fasteners—Belt.
(See Belt Fasteners).

Feed Water Purifiers.
(See Boiler Feed Water Purification).

Felting Machinery.
Smith & Furbush Mch. Co.

Fence—Steel and Iron.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.

Fibre Products.
Diamond State Fibre Co.
Keystone Fibre Co.
Standard Fibre Co.

Fillets (Calender and Doffer, Strippers, Burnishing and Emery.)
Howard Bros. Mfg. Co.

Filters—Water.
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Scaife & Sons Co., Wm. B.

Filters—Oil Removal.
Permutit Co.
Sherwood Mfg. Co.

Filters—Sand.
Permutit Co.

Films (Moving Picture).
Monarch Theatre Supply Co.
Southern Theatre Equip. Co.

Finishing.
(See Dyers, Bleachers and Finishers).

Finishing, Bleaching and Sizing Materials.
Atlantic Dyestuff Co.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Corn Products Refining Co.
Dobbins Soap Mfg. Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Electro Bleaching Gas Co.
Ford Co., J. B.
Kali Mfg. Co.
Keever Starch Co.
Klipstein & Co., A.
National Aniline & Chemical Co.
Newport Chemical Works.
Metz & Co., H. A.
Rock Glen Salt Co.
Roessler & Hasslacher Co.
Southern Distributing Co.
Staley Mfg. Co., A. E.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques.
Zavon Co., Inc.

Fire Doors and Hardware.
Richards-Wilcox Mfg. Co.
Seawell, Luke.
Sanymetal Products Co.
Vonnegut Hardware Co.

Fire Hose.
(See Hose—Fire).

Fire Protecting Paint.
(See Paint).

Fire Sprinkler Systems.
Grinnell Co., Inc.

First Aid Room Equipment.
(See Hospital Equipment).

Flexible Couplings.
Cresson-Morris Co.

Flood Lights—Electric.
Crouse-Hinds Co.
General Electric Co.

Flooring—Hardwood.
Kirkpatrick Lumber & Tim. Co.
Southern Cypress Mfg. Co.

Floor Scrubbing Machine.
American Scrubbing Equip. Co

Floor Sweeps.
See Brushes.

Fluted Rolls.
Campbell Mfg. Co.
Howard & Bullough.
Perkins & Son, B. F.
Saco-Lowell Shops.
Schofield & Sons, J. S.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co
Whitin Machine Works.

Flyers.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co
Whitin Machine Works.

Founders.
Cresson-Morris Co.
Lombard Fdry. & Mch. Works.

Fountains—Drinking.
Central Brass Mfg. Co.
Crane Co.
Manufacturing Equipment & Engineering Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Taylor, Halsey W.

Friction Clutches.
(See Clutches—Friction).

Fuel.
(See Coal).

Fuses.
(See Elec. Mchy. and Supplies).

Garage Doors and Door Hardware.
Richards-Wilcox Mfg. Co.
Seawell, Luke.

Garnett Machines.
Roy & Son Co., B. S.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas).

Gaskets.
Diamond State Fibre Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.
Sherwood Mfg. Co.

Gauges—Draft.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum.
Taylor Instrument Co.

Gauge—Oil.
Lunkenheimer Co.

Gauges—Pressure.
Taylor Instrument Co.

Gauges—Recording.
Taylor Instrument Co.

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
Diamond State Fibre Co.
General Electric Co.
Link-Belt Company.
Morse Chain Co.

Gear Cutting and Cutters.
Cresson-Morris Co.
Whitin Machine Co., D. E.

Gear Pullers.
General Electric Co.

Generators—Electric.
(See Motors and Generators)

C. A. NABORS, *President* G. H. PAPE, *Vice Pres.*
T. M. WILSON, *Secretary*

Wilson, Nabors & Pape, Inc.

COTTON

Waco, - Texas.

CABLE ADDRESS
"WILNAPA"

Go to the American Cotton Manufacturers' Association

PHILADELPHIA, PA., MAY 27-28
VIA
THE DOUBLE TRACK ROUTE
Southern Railway—Pennsylvania R. R.

Leave Atlanta	12:15 A.M.	11:40 A.M.	12:50 P.M.	3:12 P.M.
Arrive Greenville	6:30 A.M.	5:05 P.M.	6:10 P.M.	8:50 P.M.
Arrive Spartanburg	7:55 A.M.	6:10 P.M.	7:20 P.M.	9.55 P.M.
Arrive Blacksburg	8:55 A.M.	7:15 P.M.	8:13 P.M.	10:48 P.M.
Arrive Gastonia	9:43 A.M.	8:05 P.M.	.....	11:40 P.M.
Arrive Charlotte	10:35 A.M.	8:50 P.M.	9:40 P.M.	12:25 A.M.
Arrive Greensboro	1:50 P.M.	11:45 P.M.	12:25 A.M.	3:28 A.M.
Arrive Washington	11:30 P.M.	8:45 A.M.	9:45 A.M.	12:25 P.M.
Arrive Philadelphia	4:15 A.M.	12.20 P.M.	1:12 P.M.	4:04 P.M.

For further information and Pullman reservations write nearest Passenger representative.

V. L. Estes,
District Passenger Agent,
Atlanta, Ga.

R. H. Graham,
Division Passenger Agent,
Charlotte, N. C.

R. C. Cotner,
District Passenger Agent,
Spartanburg, S. C.

A. J. Lee,
City Passenger & Ticket Agent,
Greenville, S. C.

"The Southern Serves the South"

C. M. Wall & Son

Southmont, N. C.

Manufacturers of North Carolina BOX SHOOKS, BOX LUMBER and CRATING MATERIAL.

We Make a Specialty of the Textile Business.

LOWELL CRAYONS

Made in 15 different colors and white.

Used by all first-class textile mills, because they are worth their cost. The constituents are such that produce desirable results. Do not leave stains.

LOWELL CRAYON CO.
Lowell, Mass.
Trade Mark on Every Box.

CORTRIGHT METAL SHINGLES

Here's Why You Will Prefer Cortright Hand Dipped Galvanized Tin Shingles

Each shingle, first formed of prime Roofing Tin, is coated separately in a zinc bath and receives about twice the amount of zinc found on galvanized shingles.

Of course, we make both kinds—we also make them of Tin, Painted Red or Green and Pure Zinc. But where a galvanized shingle is preferred, order Cortright Hand Dipped Shingles. We'll send our book, "Concerning That Roof."

BUYERS' INDEX—Continued.

Glassware and Dishes.
(See Dishes).

Governors—Pump.
General Electric Co.

Graphite Products.
Dixon Crucible Co., Jos.

Grates—Boiler.
Detroit Stoker Co.
International Eng. Works.
Lombard Fdry. & Mch. Co.
Walsh & Weidner Boiler Co.

Grates—Mechanical.
(See Stokers).

Grease.
(See Lubricants).

Grease Cups.
(See Lubricators).

Green Houses.
Hulme, J. S.

Grindstones.
Richards-Wilcox Mfg. Co.

Grinders—Card, Cylinder, Roll, Napper and Garnet.
(See Card Grinding Machinery).

Guards—Electric Lamp.
Flexible Steel Lacing Co.

Guides—Thread.
Palmer Co., I. E.

Guider (Cloth-Electric.)
Blake Electric Mfg. Co.

Gums.
(See Finishing and Sizing Materials).

Guy Anchors.
Crouse-Hinds Co.

Gymnasium Apparatus.
Medart Mfg. Co., Fred.

Hangers.
(See Shafting and Hangers).

Hardware (Building.)
Richards-Wilcox Mfg. Co.
Seawell, Luke.
Sanymetal Products Co.
Vonnegut Hardware Co.

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Greist Mfg. Co.
Garland Mfg. Co.
Southern Bending Co.

Heads—Bobbin and Spool.
Diamond State Fibre Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus).

Heating Piping.
Grinnell Co., Inc.

Heddles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Howard Bros. Mfg. Co.
Steel Heddle Mfg. Co.

Heddle Frames.
Crompton & Knowles Loom Wks.
Steel Heddle Mfg. Co.

Hoists.
Curtis Pneumatic Mchry. Co.
Hulme, J. S.
Link-Belt Company.
Mason & Co., Volney W.
Morse Chain Co.
Wulraven Co.

Hose—Fire.
Collins, J. D.

Hosiery Dyeing Machinery
Cooker Mach. & Fdry. Co
Franklin Process Co.

Hosiery Finishing Boards.
(See Boards).

Hosiery Forms.
(See Drying Forms).

Hosiery Yarns.
(See Yarn Manufacturers).

Hospital Equipment.
Thomas Co., F. H.

Hotels.
Hotel Chisca
Hotel Gayoso
Hotel Peabody
Hotel Tuller.

Houses—Ready-Made.
Seawell, Luke.

Humidifying Apparatus.
American Blower Co.
American Moistening Co.
Carrier Eng. Corp.
Manufacturers Machine Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Humidity Indicating Instruments.
Powers Regulator Co.
Taylor Instrument Co.

Hydraulic Turbines.
(See Turbines—Steam).

Hydro Extractors.
(See Extractors).

Hydrometers.
Taylor Instrument Co.

Hygrometers.
Taylor Instrument Co.

Hygrodeiks.
Taylor Instrument Co.

Indicating and Recording Instruments and Thermometers.
General Electric Co.
Powers Regulator Co.
Taylor Instrument Co.

Indigo.
(See Dyestuffs and Chemicals).

Industrial Piping Systems.
Grinnell Co., Inc.

Industrial Relationship Service.
Sherman Service, Inc.

Injectors.
Lunkenheimer Co.
Sherwood Mfg. Co.

Insulation—Vulcanized Fibre.
Diamond State Fibre Co.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Works
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

Iron Work—Ornamental.
American Cast Iron Pipe Co
Anchor Post Iron Works.
Cyclone Fence Co.
Dufur & Co.
Lombard Iron Works & Supply Co.

Jacks.
Paulus, Chas. B.

Jacquards.
Crompton & Knowles Loom Wks

Jerker Straps.
Augusta Mill Supply Co.

Jute Bagging Machine.
Smith & Furbush Machine Co

Kettles—Size.
(See Size Kettles).

Kettles—Soda.
Lombard Iron Works & Sup. Co

Kiers.
(See Bleacher Kiers).

Knit Goods Specialties.
Knit Goods Specialty Co.

Knit Goods.
(See Cotton Cloth Commission Merchants and Dealers).

Knit Goods Washers.
(See Washers—Cloth).

Knitting Machinery and Supplies
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Marken Machine Co.
Paulus, Chas. B.
Scott & Williams.
Wildman Mfg. Co.

Laboratory Instruments and Thermometers.
Taylor Instrument Co.

Lacing—Belt.
(See Belt Lacing).

Lamps—Incandescent and Arc.
Carter Electric Co.
Cooper Hewitt Electric Co.
Crouse-Hinds Co.
Cutter Works, George.
General Electric Co.
Walraven Co.
Westinghouse Elec. & Mfg. Co.
Westinghouse Lamp Co.

Lamp Guards—Key Locking.
Flexible Steel Lacing Co.

Lamp Reflectors.
Carter Electric Co.
Cooper Hewitt Electric Co.
Crouse-Hinds Co.
Cutter Works, George.
Westinghouse Elec. & Mfg. Co.

Landscape Architects.
(See Village Architects).

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Latch Needles.
Paulus, Chas. B.

Latches (Fire Exit Self-Releasing.)
Vonnegut Hardware Co.

Laundry Machinery.
American Laundry Mach'y Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Lavatories.
Crane Co.
Manufacturing Equipment & Engineering Co.
Vogel Co., Jos. A.

Lawn Mowers.
Ideal Lawn Mower Co.

Leather Belting.
(See Belting).

Leather Specialties.
American Supply Co.
McLeod Leather & Belting Co.
Williams & Sons, I. B.

Lights—Flood.
Crouse-Hinds Co.
Cutter Works, George.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Linen Yarns.
(See Yarns—Linen).

Link Belting.
(See Belting—Link).

Linters.
(See Waste Dealers).

Liquid Chlorine.
(See Chlorine).

Loaders—Wagon and Truck.
Link-Belt Company.
Portable Machinery Co.

Locks and Latches.
Richards-Wilcox Mfg. Co.

Lockers—Metal.
Collins, J. D.
Medart Mfg. Co., Fred.
Sanymetal Products Co.

Logwood Extract.
(See Dyestuffs and Chemicals).

Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Hopedale Mfg. Co.
Mason Machine Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Stafford Co.

Loom Attachments—Automatic.
Draper Corporation.
Hopedale Mfg. Co.

Loom Harness.
(See Harness).

Lubricants.
Dixon Crucible Co., Jos.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.
Texas Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Sherwood Mfg. Co.

Lug Straps.
(See Straps—Lug).

Lumber.
Kirkpatrick Lumber & Timber Co.
Southern Cypress Mfg. Asso.

Lunch Room Equipment.
(See Restaurant).

Machine Tools.
(See Tools).

Machinists.
Cresson-Morris Co.

Marking—Dry Transfer.
Kaumagraph Co.

Marking Machines.
Marken Machine Co.

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

Mercerized Yarns.
(See Yarn Manufacturers).

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Lupton's Sons Co., David.

Metals—Perforated.
(See Screens and Sieves).

Metal Workers—Sheet.
Lombard Iron Works & Supply Co.

Meters—Flow, Air, Gas, Electric, Steam, Etc.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co.

Meters—Revolution.
Taylor Instrument Co.

Mill Baskets and Boxes.
(See Boxes—Mill).

Mill Engineer.
(See Architects and Engineers).

Mill Villages.
(See Villages).

Mill Supplies—Miscellaneous.
(See Supplies—Mill).

Mill White Paint.
(See Paint).

Monorail Conveying Systems.
Richards-Wilcox Mfg. Co.

Motors and Generators—Electric.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Hulme, J. S.
Nashville Industrial Corp.
Walraven Co., The.
Westinghouse Elec. & Mfg. Co.

Moving Picture Mch. & Supplies.
(See Theatre Equipment).

Nails—Cement Coated.
Lovingood Co.
Regnas Co., J. R.

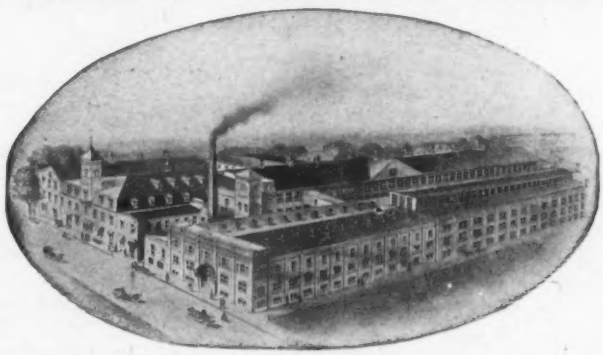
Nappers.
Roy & Son Co., B. S.

Emmons Loom Harness Company

LAWRENCE, MASS.

THE LARGEST MANUFACTURERS OF LOOM HARNESS AND REEDS IN AMERICA

Loom Harness and Reeds



COTTON HARNESS for all kinds of Plain and Fancy Weaves in Cotton and Silk Goods.

MAIL HARNESS for Cotton Duck, Worsted, Silk and Woolen Goods.

SELVEDGE HARNESS, any depth up to 25 inches, for Weaving Tape Selvedges.

REEDS for Cotton, Woolen, Silk and Duck.

Slasher and Striking Combs, Warper and Leice Reeds, Beamer and Dresser Hecks, Mending Eyes, Jacquard Heddles.

We make a specialty of equipping Harnesses for the Drawing-In Machines.

B C
TRADE MARK

BARBER-COLMAN COMPANY

Main Office and Factory

Rockford, Ill.

Boston, Mass. Greenville, S. C.

WARP TYING MACHINES

WARP DRAWING MACHINES

HAND KNOTTERS FOR SPOOLING AND WINDING

Shafts, Pulleys, Hangers, Belting Packing, Lacing

BOILERS

For Mills and Public Works. Low Prices

Tanks, Stacks, Smoke Flues, Boiler Tubes, Pipe, Valves, Fittings, Kerosene and Gasoline Engines, Wood Saws, Pumps, Heaters, Injectors, Engine Supplies and Repairs for Mills, Hotels, Public Works.

Iron and Brass Castings Cast Every Day.

LOMBARD Foundry, Machine, Boiler Works, and Supply Store

AUGUSTA .GEORGIA.

ECO

WATCHMAN'S CLOCKS

WRITE FOR CATALOGUE

ECO CLOCK CO., Southern Dept., ATLANTA, GA.

ADVERTISING is an economy and cuts the cost of selling, making lower prices or better goods possible without sacrifice of the sellers' profits.

Tycos

TEMPERATURE INSTRUMENTS

INDICATING-RECORDING-CONTROLLING

YOUR CERTIFICATE OF SERVICE

There's a *Tycos* or *Taylor* Temperature Instrument for Every Purpose.

Taylor Instrument Companies

ROCHESTER, N. Y.

A.B.

BUYERS' INDEX—Continued.

Napper Clothing.
Howard Bros. Mfg. Co.

Needles—Latch.
Paulus, Chas. B.

Office Partitions.
Sanymetal Products Co.

Oils.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Southern Cotton Oil Co.
Wadsworth, Howland & Co., Inc.

Oils—Finishing.
(See Finishing and Sizing Materials).

Oils—Lubricating.
(See Lubricants).

Oil Cups.
(See Lubricators).

Oil Paper.
Bradley Mfg. Co., A. J.

Oiling Devices.
(See Lubricators).

Openers for Cotton, Wool, Waste, Etc.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Organs.
Stieff, Inc., Chas. M.

Oxidizing Machinery.
Cocker Mch. & Fdry. Co
Salem Iron Works.
Phila. Drying Machinery Co.

Oxygen.
Commercial Acetylene Supply Co.
Standard Gas Products Co.
Southern Welding Co.

Packing Boxes & Cases—Wooden.
Hightower Box & Tank Co.
National Asso. of Box Mfgrs.
Walke Box Co., Inc.
Wall & Son, C. M.

Packings.
Augusta Mill Supply Co.
Graton & Knight Mfg. Co.
Jenkins Bros.
Walraven Co.

Paint.
American Roofing & Paint Co.
Atlantic Drier & Varnish Co.
Barrett Co., The.
Cooledge & Sons, F. J.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Southern Distributing Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Painting Contractors.
(See Contractors.)

Panel Boards.
(See Switchboards).

Paper.
Bradley Mfg. Co., A. J.
Diamond State Fibre Co.

Partitions (Office and Toilet).
Sanymetal Products Co.

Perforated Metal.
(See Screens and Sieves).

Partitions—Steel.
Dowman, Geo.
Lupton's Sons Co., David

Peroxides.
Roessler & Hasslacher Chemical Co.

Pickers—Curled Hair.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Pickers—Leather.
Augusta Mill Supply Co.
Garland Mfg. Co.

Picker Sticks.
Augusta Mill Supply Co.
Garland Mfg. Co.
Southern Bending Co.
Shambow Shuttle Co.
Walraven Co.

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Pinions.
Diamond State Fibre Co.
General Electric Co.

Pipe and Pipe Fittings.
Crane Co.
Grinnell Co., Inc.
Lunkenheimer Co.
Parks-Cramer Co.
Scaife & Sons Co., Wm. B.
Walraven Co.

Piping Contractors.
Grinnell Co., Inc.

Pipe Threading and Cutting Machines.
Walraven Co., The.

Playground Apparatus Equipment.
Central Brass Mfg. Co.
Crane Co.
Hill-Standard Co.
Manufacturing Equipment & Engineering Co.
Medart Mfg. Co., Fred.
Puro Sanitary Drinking Fountain Co.
Taylor, Halsey W.

Pneumatic Machinery & Tools.
Curtis Pneumatic Mchry. Co.

Portable Conveyors.
(See Conveyor.)

Power Transmission.
Aldrich Mach. Works.
Allis-Chalmers Mfg. Co.
Augusta Mill Supply Co.
Carlyle-Johnson Mch. Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Fafnir Bearing Co.
General Electric Co.
Hyatt Roller Bearing Co.
Lewellen Mfg. Co.
Link-Belt Company.
Manufacturing Equipment & Engineering Co.
Morse Chain Co.
Russell Mfg. Co.
S K F Industries.
Slaughter Mchry. Co., G. G.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.
Walraven Co., The.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.
Wood's Sons Co., T. B.

Presses.
American Laundry Mchry. Co.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Galland-Henning Mfg. Co.
Lovingood Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

Pulleys.
Augusta Mill Supply Co.
Cresson-Morris Co.
Diamond State Fibre Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Mason & Co., Valley W.
Walraven Co., The.
Wood's Sons Co., T. B.

Pulley Covering.
Williams & Sons, I. B.

Pumps.
Allis-Chalmers Mfg. Co.
Textile Finishing Machinery Co.
Toomey, Frank.
Walraven Co.
Walsh & Weidner Boiler Co., The.
Westinghouse Elec. & Mfg. Co

Pump Valves.
(See Valve Discs).

Psychrometers—Sling.
Taylor Instrument Co.

Pyrometers.
Taylor Instrument Co.

Quill Cleaning Machines.
Terrell Machine Co.
Dufur & Co.

Railroads.
Georgia Railroad.
Seaboard Air Line Ry.
Southern Railway.

Receptacles—Fibre.
(See Fibre Products).

Recording Instruments.
Boston Machine Works.
General Electric Co.
Powers Regulator Co.
Service Recorder Co.
Taylor Instrument Co.

Recorders (Machine Service Time).
Service Recorder Co.

Recorders—Temperature.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.
Southern Bending Co.
Shambow Shuttle Co.
Walraven Co.

Reels.
Cocker Mch. & Fdry. Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield Co., Wm.
Whitin Machine Works.

Reflectors—Lamp.
(See Lamp Reflectors).

Regulators—Liquid Level.
General Electric Co.

Refrigerating Machines.
Southern States Supply Co.

Regulators—Pressure.
General Electric Co.
Taylor Instrument Co.

Regulators—Temperature.
(See Temperature Controllers).

Reinforcing Slag.
Birmingham Slag Co.

Repairing—Electrical.
Westinghouse Elec. & Mfg. Co.

Repairing—Textile Machinery, Etc.
Autogenous Welding Co.
General Machine Works.
Southern Spindle & Flyer Co.
Southern Welding Co.
Standard Gas Products Co.

Restaurant Equipment.
Pick & Co., Albert.
Sanymetal Products Co.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co.

Ring Travelers—Steel and Bronze.
Whitinsville Spinning Ring Co.
Whitin Machine Works.

Rings—Spinning.
(See Spinning Rings).

Rocker Shaft Bearings.
(See Bearings).

Rolls—Calender.
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Roy & Son Co., B. S.
Textile Finishing Machinery Co.

Rolls—Rubber Covered.
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son Co., B. F.
Textile Finishing Machinery Co.

Rolls—Steel.
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Southern Spindle & Flyer Co.
Textile Finishing Machinery Co.

Rolls—Top.
Campbell Mfg. Co.

Roofing.
American Roofing & Paint Co.
Barrett Co., The.
Cooledge & Sons, F. J.
Cortright Metal Roofing Co.
Kirkpatrick Lum. & Timber Co.
Peaslee-Gaulbert Co., Inc.
Wadsworth, Howland & Co.
Walraven Co.

Roof and Cement Coating.
American Roofing & Paint Co.
Atlantic Drier & Varnish Co.
Barrett Co.
Cooledge & Sons Co., F. J.
Du Pont de Nemours & Co., E. I.
Hampden Paint & Chem. Co.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co.

Rope—Transmission.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Walraven Co.

Roving Cans and Trucks.
(See Cans—Roving).

Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Rubber Stamps.
(See Stamps, Stencils, Etc)

Salt.
Rock Glen Salt Co.

Sanitary Products.
Central Brass Mfg. Co.
Crane Co.
Manufacturing Equipment & Engineering Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Sanitas Co.
Taylor, Halsey W.
Thomas Co., F. H.
United Electric Co.
Vogel Co., Jos. A.

Sash-Window—Steel.
Detroit Steel Products Co.
Dowman, Geo.
Lupton's Sons Co., David.
Seawell, Luke.

Scales.
Lovingood Co.
Toledo Scale Co.

Scale Preventer—Boiler.
(See Boiler Feed Water Purification).

Schools—Textile.
Georgia School of Technology.

Screens (Moving Picture).
Monarch Theatre Supply Co.
Southern Thetatre Equip. Co.

Screens and Sieves—Perforated.
Erdle Perforating Co.
Link-Belt Company.

Scouring Machinery.
(See Washers (Cloth)

Scrubbing Machine—Floor.
American Scrubbing Mch. Co.

Second Hand Machinery and Supplies.
Nashville Industrial Corp.
Toomey, Frank, Inc.
Walraven Co.

Sewing Machines.
Merrow Machine Co., The.
Textile Finishing Machinery Co.

Shades—Electric Lamp.
(See Reflectors).

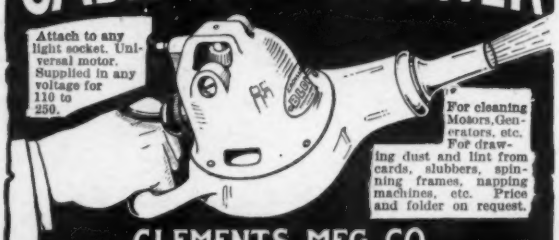
Shafting and Hangers.
Augusta Mill Supply Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Fafnir Bearing Co.
Link-Belt Co.
S K F Industries.
Walraven Co., The.
Wood's Sons Co., T. B.

COAL

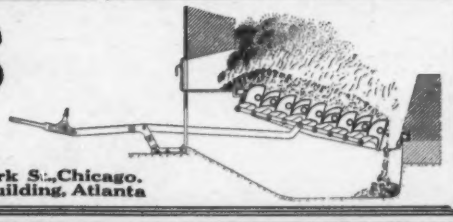
HIGH GRADE
KENTUCKY, TENNESSEE AND ALABAMA
STEAM, GAS,
DOMESTIC, SMITHING
FURNACE AND FOUNDRY COKE
UNITED STATES FUEL CORPORATION
CHATTANOOGA, TENN.

MEDART
Steel Lockers
Send for Catalog A-6
Playground & Gymnasium Equipment
Send for Catalog L
Fred Medart Manufacturing Co.
Potomac & DeKalb Sts. St. Louis, Mo.
Gordon Lewis, District Mgr., Walton Bldg., Atlanta, Ga.

AUGUSTA MILL SUPPLY CO.
Textile Machinery
General Mill Supplies
Transmission and Power Apparatus
429 JACKSON ST. AUGUSTA, GA.

CADILLAC PORTABLE ELECTRIC BLOWER

Attach to any light socket. Universal motor. Supplied in any voltage for 110 to 250.
For cleaning Motors, Generators, etc. For drawing dust and lint from cards, slubbers, spinning frames, napping machines, etc. Price and folder on request.
CLEMENTS MFG. CO.
612 FULTON ST. CHICAGO, ILL.

ALL STEEL ECONOMY FIRE PROOF **BALING PRESSES**
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN USA
ECONOMY BALER CO., DEPT C ANN ARBOR, MICH., U.S.A.

COKAL HAND STOKERS

Hundreds of satisfied users report saving of fuel and increased boiler capacity.
Write for Catalog.
COKAL STOKER CORPORATION, 1017 N. Clark St., Chicago.
517 Hurt Building, Atlanta

WATER
WE-FU-GO AND SCAIFE
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

COTTON—WOOL—SILK
DYED or BLEACHED in SKEIN
Fast to Bleaching. Delivered in Skein or Tube.
PROMPT DELIVERIES—RIGHT PRICE
Backed by 18 Years Experience.
Same yardage delivered as received. COUNT YOUR SKEINS.
Your Patronage Solicited.
HABERSHAM KING, JR.
Plant: 4-6 North Butler St., Atlanta, Ga.

STENCILS FOR COTTON SHIPPERS, COTTON MILLS MERCHANTS & MANUFACTURERS—ALSO BRUSHES, INK, MARKING POTS
RUBBER STAMPS, NOTARIAL & CORPORATION SEALS
ATLANTA RUBBER STAMP & STENCIL WORKS
OFFICE 33 LUCKIE ST. WORKS 350 EDGEWOOD AVE.
OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA, GA.

BUYERS' INDEX—Continued.

Shears.
Roy & Sons Co., B. S.

Shelving—Sectional Steel.
Collins, J. D.
Hyatt Roller Bearing Co.
Lupton's Sons Co., David.
Medart Mfg. Co., Fred.
Sanymetal Products Co.
Seawell, Luke.
Vonnegut Hardware Co.

Shingles—Asphalt.
Barrett Co.

Shingles—Metal.
Cortright Metal Roofing Co.

Shingles—Wood.
Kirkpatrick Lum. & Timber Co.
Southern Cypress Mfg. Asso.

Shipping Room Machinery and Supplies.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Collins, J. D.
Diamond State Fibre Co.
Handy Equip. Corp.
Hightower Box & Tank Co.
Hulme, J. S.
Keystone Fibre Co.
Lane & Bro., W. T.
Lovingood Co.
Mathews Gravity Carrier Co.
Regnas & Co., J. R.
Standard Fibre Co.
Signode System, Inc.
Toledo Scale Co.
Walraven Co., The.
Wolke Box Co., Inc.
Wall & Son, C. M.

Shower Baths and Cabinets.
Crane Co.
Sanymetal Product sCo.

Shuttles.
Carter, A. B.
Crompton & Knowles Loom Wks.
Draper Corporation.
Shambow Shuttle Co.
Southern Bending Co.
Walraven Co.

Sinkers.
Paulus, Chas. B.

Singeing Machinery.
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Machinery Co., The.

Size Box Temperature Controller.
Powers Regulator Co.
Taylor Instrument Co.

Size Kettles.
Butterworth & Sons Co., H. W.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

Sizing and Finishing Compounds.
(See Finishing and Sizing Materials).

Skewers.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.

Skylights—Rolled Steel.
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David.
Seawell, Luke

Slag for Concrete.
Birmingham Slag Co.

Slashers and Slasher Room Supplies.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Lovingood Co.
Regnas & Co., J. R.
Saco-Lowell Shops.
Salem Iron Wks.
Textile Finishing Machinery Co., The.

Slasher Tape.
(See Tape—Slasher).

Slate Asphalt Roofing.
Barrett Co.

Sliding Partition Hardware.
Richards-Wilcox Mfg. Co.
Sanymetal Product sCo.
Seawell, Luke.
Vonnegut Hardware Co.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Soap—Textile.
Arnold, Hoffman Co.
Borne, Scrymser Co.
Ciba Co., Inc.
Dobbins Soap Mfg. Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Kali Mfg. Co.
Klipstein & Co., A.
Newport Chemical Works.
Pick & Co., Albert.
United Chemical Products Corp.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques.

Soda (Textile, Soda Ash and Boiling.)
Klipstein & Co., A.

Softeners—Cotton.
Althouse Chemical Co.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Borne, Schrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Du Pont de Nemours & Co., E. I.
Ford Co., J. B.
Grasselli Chemical Co.
Kali Mfg. Co.
Klipstein & Co., A.
Newport Chemical Works.
Roessler & Hasslacher Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.
Zavon Co., Inc.

Softeners—Water.
(See Water Softeners).

Solderless Connectors—Frankel.
Westinghouse Elec. & Mfg. Co.

Solvents.
(See Finishing).

Sorting Table Tops.
Pick & Co., Albert.

Spindles.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Spinners.
Arkray Mills, Inc.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Fletcher Works.
Florsheim, H. A.
Gray Mfg. Co.
Hunter Mfg. & Commn. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

Spinning Frames.
American Machine Co., H. & B.
Crompton & Knowles Loom Wks.
Howard & Bullough.
Schaum & Uhlinger.
Saco-Lowell Shops.
Whitin Machine Works.

Spinning Rings.
Draper Corporation.
Howard & Bullough.
Greenville Spool & Mfg. Co.
Gre'at Mfg. Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

Spinning Tape Specialists.
American Textile Banding Co., Inc.
Barber Mfg. Co.
Campbell Mfg. Co.
Knit Goods Specialty Co.

Spooling Machinery.
Draper Corporation.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Warp Compressing Mach. Co.
Whitin Machine Works.

Spools and Skewers.
Carter, A. B.
Greenville Spool & Mfg. Co.
Shambow Shuttle Co.
Walraven Co.

Sprinkler Systems and Piping.
Grinnell Co., Inc.

Sprinkler Tanks.
(See Tanks, Towers, Etc.).

Sprockets.
Link-Belt Company.
Morse Chain Co.

Stamping—Die Transfer System.
Kaumagraph Co.

Stamps, Stencils and Stencil Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

Stand Pipes.
(See Tanks, Towers, Etc.).

Starch and Gums.
(See Finishing and Sizing Materials).

Steam Engines.
(See Engines—Steam).

Steam Hose.
(See Hose—Fire.)

Steam Pumps.
(See Pumps—Steam).

Steam Ship Agents.
Campbell & Co., A. R.
International Mercantile Marine Co.
Leyland & Co., Ltd., Frederick
Sgitcovich & Co., Inc., S.
Strachan Shipping Co.
Williamson & Rauers Co.

Steam Traps.
(See Traps—Steam).

Steel Buildings.

Steel Doors, Window, Partition, Etc.).
Detroit Steel Products Co.
Lupton's Sons Co., David.
Sanymetal Products Co.
Seawell, Luke.

Steel Lockers.
Medart Mfg. Co., Fred.
Seawell, Luke.

Stencils and Stencil Papers.
(See Stamps and Stencils).

Stencil Brushes.
(See Marking Pots and Brushes).

Stencil Cutting Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

Sticks (Picker).
See Picker Sticks.

Stop Motion.
Crompton & Knowles Loom Wks.
Draper Corporation.
Eclipse Textile Devices, Inc.
Hunt Automatic Stop Motion, Inc.
Whitin Mch. Wks.
Wildman Mfg. Co.

Stokers.
Cokal Stoker Co.
Detroit Stoker Co.
Westinghouse Elec. & Mfg. Co

Storage Racks.
(See Shelving).

Straps—Lug.
Augusta Mill Supply Co.
Garland Mfg. Co.

Strapping.
(See Leather Specialties or Band Strapping).

Street Lighting Fixtures.
Cutter Works, George.

Supplies—General Mill.
Augusta Mill Supply Co.
Carter, A. B.
Hulme, J. S.
Howard Bros. Mfg. Co.
Nashville Industrial Corp.
Regnas & Co., J. R.
Slaughter Machinery Co., G. G
Southern Distributing Co.
Steel Heddle Mfg. Co.
Walraven Co., The.

Switches—Knife-Elec.
Crouse-Hinds Co.
Cutter Works, George.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Switchboards—Panel.
Crouse-Hinds Co.
Cutter Co., George.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Tables, Chairs, Etc.
Hill-Standard Co.
Manufacturing Equipment & Engineering Co.
Medart Mfg. Co., Fred.
Pick & Co., Albert.

Tag Addressing Machines.
Regnas & Co., J. R.

Tallow.
(See Finishing Materials).

Tanks and Tubs.
Hightower Box & Tank Co.
Lombard Iron Works & Supply Co.
Permutit Co.
National Asso. of Box Mfgrs.
Phila. Drying Machinery Co.
Salem Iron Wks.
Textile Finishing Machinery Co., The.
Walsh & Weidner Boiler Co.

Tapes and Braids.
American Textile Banding Co., Inc.
Barber Mfg. Co.
Knit Goods Specialty Co.
Weimar Brothers.

Tape Looms—Cotton.
Fletcher Works.
Schaum & Uhlinger.

Tape—Slasher.
Lovingood Co.
Regnas & Co., J. R.

Tapes—Spinning and Twisting.
Barber Mfg. Co.
Knit Goods Specialty Co.

Tape Making Machines.
(See Bandage and Tape Mach.)

Telephones—Calling System.
Carter Electric Co.

Temperature Controllers.
Carrier Eng. Corp.
General Electric Co.
Parks-Cramer Co.
Powers Regulator Co.
Sturtevant Co., B. F.
Taylor Instrument Co.

Carrier Engineering Corporation

39 Cortlandt St., New York, N. Y.

Boston Buffalo Philadelphia Chicago

AIR CONDITIONING

(Manufactured Weather)

HUMIDIFICATION CLEANING

WINTER HEATING SUMMER COOLING

We will be glad to tell you why and how nearly two hundred of the finest mills in the U. S. are making "Every day a *good* day" with

CARRIER EQUIPMENT

The American Audit Co.

F. W. LAFRENTZ, C. P. A., Pres. Telephone Ivy 869
H. M. RICE, C. P. A., Vice-Pres. Cable Address
A. F. LAFRENTZ, Secy. & Treas. Amdit, New York

NEW YORK—100 Broadway (Home Office).
33rd St. and 5th Ave., Waldorf-Astoria.
ATLANTA BRANCH—1013-1017 4th National Bank Bldg.
CHICAGO—Marquette Building.
BOSTON—P. O. Square Bldg.
PHILADELPHIA—Bellevue Court Bldg.
BALTIMORE—Garrett Bldg.
WASHINGTON, D. C.—Colorado Building.
NEW ORLEANS—Maison Blanche.
RICHMOND, VA.—American National Bank Building.
LONDON, E. C.—50 Gresham St., Bank.
MILWAUKEE—Loan & Trust Bldg.
SCRANTON—County Bank Bldg.
Specialists in Cost Systems and Manufacturing Accounts.

C. B. BIDWELL, P. A., Resident Vice-President

Spiker & Lose

ENGINEERS

Reports, estimates, appraisals, plans, supervision and consultation on all classes of reinforced concrete, steel and timber structures. Specialty — mills, warehouses, industrial and hydro-electric developments.

519-20 Forsyth Bldg., Atlanta, Ga.

PERFORATED METALS

of Aluminum, Brass, Copper, Steel, Tin, Zinc and other Sheet Metals and materials for Cotton Seed Oil Mills, Cotton Gins, Phosphate Screens, Coal Screens, Ventilators, Electrical Devices, Sugar Mills, Surfacing for Sand Rolls, Threshing Machines, Fanning Mills, Pulp Machinery, Grilles (Register Faces) all Mining Screens and

FOR EVERY PURPOSE

The Best screens possible. We make everything in perforated metals. All orders handled rush.
Send for Metal Sample Plate Circular.

ERDLE PERFORATING CO.
163 York St. Rochester, N. Y.

The Test of Time
WHEN tape drive was first applied to cotton frames, Barber Tapes were the ones that were held up and selected by engineers as the best. The reason was that Barber Tapes were designed with the proper weight and construction to get maximum spindle speed and maximum service.
Since that time there have been many kinds of tape placed on the market, yet Barber still maintains that enviable reputation established years ago.
We carry extensive stocks and a wire to us at our expense brings service that is swift and sure. Write or wire for prices.
BARBER MFG. CO.,
Lowell, Mass.
Spinning Tape Specialists.
BARBER
Spinning & Twisting
TAPES

BUYERS' INDEX—Continued.

Temples.
Draper Corporation.

Tenters.
Butterworth & Sons Co., The.
Textile Finishing Mach. Co.

Tenter Frame Guider (Electric).
Blake Electric Mfg. Co.

Textile Machinery.
(See Cotton Mill Machinery).

Theatre Equipment.
Monarch Theatre Supply Co.
Southern Theatre Equip. Co.

Thermometers—All Kinds.
Taylor Instrument Co.

Thin Place Preventers.
Draper Corporation.

Thread Guides.
Palmer Co., The I. E.

Time Clocks.
(See Clocks.)

Tiering Machines.
Collins, J. D.
Lovingood Co.
Portable Mchry. Co.
Regnas & Co., J. R.

Ties—Baling.
(See Bale Ties).

Toilets.
Crane Co.
Manufacturing Equipment & Engineering Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos. A.

Toilet Partitions.
Lupton's Sons Co., David.
Sanymetal Products Co.

Tool Cabinets—Steel.
Lupton's Sons Co., David

Tool Stands—Steel.
Lupton's Sons Co., David

Tools—All Kinds.
Walraven Co., The.

Top Flats Reclothed.
Howard Bros. Mfg. Co.

Towers.
(See Tanks and Towers).

Tractors—Electric, Industrial.
Collins, J. D.
Regnas & Co., J. R.

Transmission—Power.
(See Power Transmission Machinery).

Transfer Points.
Paulus, Chas. B.

Traps—Return Steam.
American Blower Co.
Morehead Mfg. Co.
Wright-Austin Co.

Trucks—Auto.
Packard Motor Car Co.

Truck & Wagon Loaders.
Portable Mchry. Co.

Trucks, Baskets, Etc., Canvas.
Lane & Bro., W. T.

Trucks—Electric—Inter.
Collins, J. D.
Regnas & Co., J. R.

Trucks—Hand and Elevating.
Collins, J. D.
Handy Equip. Corp.
Hulme, J. S.
Lovingood Co.
Regnas & Co., J. R.

Trucks—One Man.
Handy Equip. Corp.

Trucks—Fibre—Inter, Etc.
Diamond State Fibre Co.
Keystone Fibre Co.
Standard Fibre Co.

Tubes—Cloth.
Diamond State Fibre Co.

Turbines—Steam.
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Twisting Machinery and Supplies.
Barber Mfg. Co.
Carter, A. B.
Draper Corporation.
Howard & Bullough.
Knit Goods Specialty Co.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Unloader &Bag Pilers.
Portable Mchry. Co.

Urinals.
Crane Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos. A.

Unions—Bronze.
Crane Co.
Jenkins Bros.
Lunkenheimer Co.

Vacuum Cleaning System for Mills.
Sturtevant Co., B. F.
United Electric Co.

Vacuum Pans.
Cresson-Morris Co.

Valves—Angle, Globe, Cross, Blow-off, Check, Gate, Pop-Safety, etc.).
Crane Co.
Golden-Anderson Valve Specialty Co.
Jenkins Bros.
Lunkenheimer Co.

Valves—Non-return Stop.
Crane Co.
Golden-Anderson Valve Specialty Co.
Jenkins Bros.
Lunkenheimer Co.

Valve Discs.
Jenkins Bros.

Variable Speed Transmission.
Lewellen Mfg. Co.

Varnishes.
American Roofing & Paint Co.
Atlantic Drier & Varnish Co.
Barrett Co.
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Hampden Paint & Chem. Co.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Ventilating Apparatus.
American Blower Co.
Carrier Eng. Corp.
General Electric Co.
Parks-Cramer Co.
Perkins & Son, Inc., B. F.
Sargent's Sons Co., C. G.
Seawell, Luke.
Sturtevant Co., B. F.
Tolhurst Machine Co.

Vises and Benches.
Richards-Wilcox Mfg. Co.

Village Architects and Designers
Lockwood, Green & Co.
Sirrine, J. E.
Spiker & Lose.

Village Houses.
(See Houses—Ready-Built).

Wagon and Car Unloaders.
Curtis Pneumatic Mchry. Co.
Portable Machinery Co.

Warehouse—Portable.
(See Buildings).

Warehouse Door Hardware.
(See Doors and Hardware).

Warp Drawing Machine.
Cocker Machine & Fdry. Co.
Crompton & Knowles Loom Wks.

Warpers and Warping Machinery.
Cocker Mch. & Fdry. Co.
Draper Corporation.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Warp Compressing Mach. Co.

Wash Basins.
(See Lavatories).

Washers—Cloth.
American Laundry Machinery Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Fdry. Co.
Klauder-Weldon Dyeing Mch. Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Mchry. Co.
Tolhurst Mch. Wks.

Washers.
Diamond State Fibre Co.

Waste Bins—Steel.
Lupton's Sons Co., David.

Waste Dealers.
Steele By-Products Co.
Valley Waste Mills.

Waste Machinery—Cotton.
Howard & Bullough.
Saco-Lowell Shops.
Sargent's Sons Corp., C. G.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Co.

Watchman Clocks.
(See Clocks—Watchman).

Water Coolers—Fountain).
Central Brass Mfg. Co.
Crane Co.
Manufacturing Equipment & Engineering Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Taylor, Halsey W.

Water Columns.
Lunkenheimer Co.

Water Softeners.
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Scaife & Sons Co., Wm. B.

Water Towers.
(See Tanks and Towers).

Waterproofing Machinery.
Butterworth & Sons Co., H. W.
Textile Finishing Machinery Co., The.

Weaving.
(See Yarn Manufacturers).

Welding Apparatus—Electric Arc.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Welding Apparatus and Supplies—Oxy-Acetylene.
Commercial Acetylene Supply Co.
Southern Welding Co.
Standard Gas Products Co.

Welding—Job.
Autogenous Welding Co.
Southern Welding Co.
Standard Gas Products Co.

Welfare Architects.
(See Village Architects).

Welfare Equipment.
Central Brass Mfg. Co.
Chattanooga Queensware Co.
Crane Co.
Cutter Works, George.
Hill Standard Co.
Manufacturing Equipment & Engineering Co.
Medart Mfg. Co., Fred.
Monarch Theatre Supply Co.
Pick & Co., Albert.
Puro Sanitary Drinking Fountain Co.
Sanitas Co.
Southern Theatre Equip. Co.
Taylor, Halsey W.
Thomas Co., F. H.
Westinghouse Elec. & Mfg. Co.

Well Drilling.
Robbins, J. E.

Wheels—Fibre.
(See Fibre Products).

Wheel Puller.
General Electric Co.

Whistles—Steam.
Crane Co.
Lunkenheimer Co.

Whizzers.
Tolhurst Mch. Wks.

Winders.
Firsching, J. A.
Foster Machine Co.
Howard & Bullough, American Machine Co.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Universal Winding Co.

Window Frames & Sash—Steel.
Detroit Steel Products Co.
Lupton's Sons Co., David
Seawell, Luke

Window Sash—Steel.
Detroit Steel Products Co.
Lupton's Sons Co., David.
Seawell, Luke.

Wires—Drop.
(See Drop Wires).

Wiring Conduits and Fittings.
See Electric Conduits.

Wiring—Elecrical.
(See Electrical Contractors).

Wood.
(See Lumber).

Wood Boxes.
(See Packing Cases.)

Wood Preserver.
Armstrong Roofing & Paint Co.
Atlantic Drier & Varnish Co.
Barrett Co.
Du Pont de Nemours & Co., E. I.
Johnson & Co., Inc., Oliver.
Patterson Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Wood Pulleys.
(See Pulleys).

Woodworkers' Benches and Vises.
Richards-Wilcox Mfg. Co.

Woolen Machinery.
Butterworth & Sons Co., H. W.
Crompton & Knowles Loom Wks.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co.
Warp Compressing Mach. Co.
Whitin Machine Works.

Yarn Manufacturers.
American Yarn & Processing Co.
Arkray Mills, Inc.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Florsheim, H. A.
Gray Mfg. Co.
Hunter Mfg. & Comm. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.
Weimar Bros.

Yarn Dealers & Comm. Merchants.
(See Cotton Yarn and Cloth Commission Merchants and Dealers).

Yarn Dyers.
(See Dyers).

Yarn Testers.
Scott & Co., Henry L.

UNIVERSAL WINDING COMPANY
TEXTILE WINDING MACHINES
JEESONA

An Atlanta Office
in charge of
Winthrop S. Warren
has been opened at
1121 Candler Building

Frederick Jackson,
SOUTHERN AGENT,
Box 523, Charlotte, N. C.

BOSTON U.S.A
PROVIDENCE R.I. NEW YORK CHARLOTTE, N.C.
PARIS MANCHESTER BOMBAY

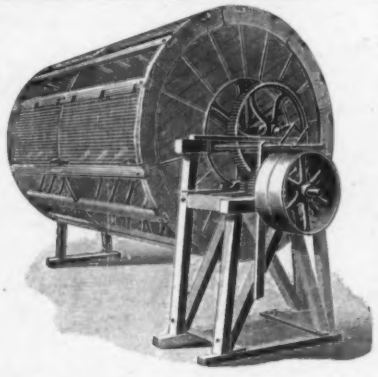
G. G. SLAUGHTER MACHINERY COMPANY
GREENVILLE, S. C.
Complete Power Plant Equipment

ENGINES
BOILERS and STACKS
PUMPS
CONDENSERS
FEED WATER HEATERS
METERING HEATERS
COMPRESSORS
STEAM TURBINES
TANKS
COOLING TOWERS
SPRAY PONDS
WATER SOFTENERS
MULTIPORT VALVES
STEAM & OIL SEPARATORS

Also
TEXTILE MACHINERY

Estimates Furnished Correspondence Solicited

DYE HOUSE MACHINERY
Oxidizers are built with spur gear and also with worm gear drive. Also makers of Dye Machines, Oxidizers, Tom-Toms, and dye house machinery, to specifications.
Write us.
SALEM IRON WORKS,
Winston-Salem, N. C.



Please Let Us Quote You Price on
Salt
when in the Market
ROCK GLEN SALT CO.
ROCK GLEN, N. Y.

Schofield Patent Automatic Opener and Duster
For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.
"Schofield" intermediate feeds for Cards, Wool, Rag, Waste, Hair and Lumper Pickers, Automatic, Cone and Oldham Willows, Rag and Extract Dusters, Waste Pullers, Blamaine Lap Feeds, Curled Hair Pickers, Needle Looms, etc.
WILLIAM SCHOFIELD COMPANY
Iron Founders, Textile Machinery Builders.
Krams Ave., Manayunk, Philadelphia, Pa.

GEORGE DOWMAN
200 NATIONAL CITY BUILDING,
ATLANTA, GEORGIA
We Are Prepared To Furnish
FIRE DOORS AND WINDOWS OF ALL TYPES
ORNAMENTAL IRON WORK
OVERHEAD CARRIER SYSTEMS
SKYLIGHTS, VENTILATORS
METAL SHINGLES AND CEILING
TOILET PARTITIONS—METAL STAIRS
Contracts Taken for Complete Installations

Liquid EBG Chlorine
Our container equipment includes 100 and 150 pound Cylinders, Ton Drums, and Tank Cars.
Electro Bleaching Gas Co.
PIONEER MANUFACTURERS of LIQUID CHLORINE
Plant: NIAGARA FALLS, N.Y.
Main office 18 East 41st Street New York. *Chicago office* 11 So. La Salle St.

Advertisers' Index

Aberfoyle Mfg. Co. 319
Aldrich Machine Works 328
Allis-Chalmers Mfg. Co. 334
American Audit Co. 376 and 391
American Blower Co. ..... *
American Cast Iron Pipe Co. ..380
American Dock Terminal 371
American Laundry Mchry. Co..297
American Machine Co. H. & B.503
American Moistening Co. 27
American Roofing & Paint Co...380
American Scrubbing Equipment Co. 96
American Dyewood Co. 34
American Supply Co. 322
American Textile Banking Co., Inc 558
American Water Softener Co. .303
American Yarn & Processing Co. 320
Anchor Post Iron Works 514
Anderson, Clayton & Co. 351
Arabol Mfg. Co. 397
Arkray Mills, Inc. 363
Arlington Cotton Mills 363
Arnold, Hoffman & Co. 295
Arrow Mills, Inc. 363
Associated Business Papers, Inc.68
Atlanta Brush Co. 24
Atlanta National Bank 374 & 375
Atlantic Drier & Varnish Co. .. 87
Atlantic Dyestuff Co 314
Atlanta Rubber Stamp & Stencil Works 391
Atlas Electric Devices Co. 302
Augusta Mill Supply Co. 391
Autogenous Welding Co. 332

Barber-Colman Co. ..12 and 389
Barber Mfg. Co. 393
Barnwell & Co. 343
Barrett & Company 362
Barrell Co., Wm. L. 368
Barrett Co., The 501
Beer, H. & B. .....352 and 369
Bennett, Tarlton & Co. 376
Birmingham Slag Co. 81
Blake Electric Mfg. Co. ..... *
Bliss, Fabyan & Co. 369
Borne, Scrymser Co. 316
Borromite Co. of America 302
Bosson & Lane 318
Boston Machine Works Co...540
Bradley Mfg. Co., A. J. 295
Brinton Co., H. 556
Butterworth & Sons Co., H. W.296

Campbell & Co., A. R. 348
Campbell Mfg. Co. ..... *
Carlyle-Johnson Machine Co...326
Carrier Engineering Corp. 391
Carter, A. B. 323
Carter Electric Co. 334
Carver-Beaver Yarn Co. 363
Central Brass Mfg. Co. 321
Chicago Watchmen's Clocks Works 534
Ciba Co., Inc. 314
Clark & Co., John F. 357
Citizens & Southern Bank 41 & 377
Classified Opportunities 381
Clements Mfg. Co. 391
Cocker Machine & Foundry Co.306
Cokal Stoker Co.....391
Cold Springs Textile Corp. ..548
Collins, J. D. 327
Commercial Acetylene Supply Co. 540
Cooledge & Sons, F. J. 331
Cooper Hewitt Electric Co. .. 93
Corn Products Refining Co. ..314
Cortright Metal Roofing Co. ...387
Cooper & Griffin, Inc. 378
Cotten Concentration Co. 349
Couch Cotton Mills, Inc. 365
Crane Co. .....66 and 67
Cresson-Morris Co. 328
Crompton & Knowles Loom Works. 10
Crown Mfg. Co. 367
Crouse-Hinds Co. 91
Curtis Pneumatic Machinery Co.51
Cutter Works, George ..... *
Cutts, Co., E. A. 380
Cyclone Fence Co. 399

Davis, Roger W. 21
Delta and Pine Land Co. 337
Detroit Graphite Co. 84
Detroit Steel Products Co..... 80
Detroit Stoker Co. 333
Diamond State Fibre Co. 321
Dixon Crucible Co., Joseph ..538
Dobbins Soap Mfg. Co. 558
Dodge Sales & Eng'g Corp... 63
Dowman, George 395
Draper Corporation 3
Dufur & Co. 380
Du Pont de Nemours Co., E. I.307

Eclipse Textile Devices 43
Eco Clock Co. 389
Economy Baler Co. 391
Electric Smelting & Aluminum Co. 558
Electro Bleaching Gas Co. 395
Ellis & Co., C. P. 356
Emmons Loom Harness Co. ..389
Erdle Perforating Co. 391
Ernst & Ernst 518
Exposition Cotton Mills 369

Fafnir Bearing Co. 530
Fawcett, Hughes 363
Firsching Co., J. A. 558
Flexible Steel Lacing Co. 329
Fletcher Works 298
Flint & Co., E. S. 348
Flint Mfg Co. 363
Florsheim, H. A. 363
Fonda Organization, The E. A. 13
Ford Co., J. B. 316
Foster Machine Works 507
Foundation Co., The 82
Franklin Process Co. 299

Galland-Henning Mfg. Co. ...538
Garland Mfg. Co. 538
Geissler & Co., S. 357
General Electric Co. 93
General Machine Works 558
Georgia Railroad ..... *
Georgia School of Tech 550
Golden-Anderson Valve Specialty Co. 72
Goold & Co. 335
Goode, R. L. 380
Grasselli Chemical Co. 312
Gray Mfg. Co. 363
Greenville Spool Mfg. Co. ... *
Greist Mfg. Co. 29
Grinnell Co., Inc. 2
Gude & Co. 380

Hannay & Co., W. M. 343 & 361
Handy Equipment Co. 54
Harris, Irby & Vose 347
Hayward & Sons, J. D. 358
Hearne System 512
Hemphill Mfg. Co. 546
Hightower Box & Tank Co. .. 52
Hill Standard Co. ..... *
Hopedale Mfg. Co. 26
Hotel Chisca 342
Hotel Gayoso 342
Hotel Peabody 342
Hotel Tuller 373
Howard Bros. Mfg. Co. 18
Howard & Bullough Mach. Co..503
Hulme, J. S. 540
Hunt Automatic Stop Motion, Inc. 40
Hunter Mfg. & Comm. Co. 510
Huntington & Guerry, Inc. .. 92
Hyatt Roller Bearing Co. .....1, 4, 5, 8 and 9

International Eng'g Works .. 74
International Mercantile Marine Co. 349
Irving National Bank 521
Iselin & Co., Wm. 363

Jenkins Bros 331
Johnson & Co., Inc., Oliver .. 90
Jordan Mfg. Co. 540

Kali Mfg. Co. 310
Kaumagraph Co. 534
Keever Starch Co. 312
Keystone Fibre Co. 31
King, Jr., Habersham 391
Kirkpatrick Lumber & Timber Co. 332
Klauder-Weldon Dyeing Mach. Co. 304
Klipstein & Co., A. 316
Knit Goods Specialty Co. 524

Lane & Bros., W. T. 36
Lane & Co., J. H. 364
Leigh-Ellis & Co. 373
Levy & Sons, M. 354
Lewellen Mfg. Co. 540

ARABOL SIZING TALLOW

This is an especially prepared tallow for softening all counts of cotton yarns. We absolutely assure you it will produce any amount of softening desired. In addition to this it will prevent any sticking of yarn to the slasher cylinders and also cause the yarn to open perfectly at the lease. On light pick goods it can be used alone, however we recommend the use of our Gum G in connection with it on goods of 48 picks or more. To be used on either white or colored goods.

Arabol Manufacturing Company

100 William Street, New York City

Lewis, John D. 295
Leyland & Co., Ltd., Fred'k. ..354
Link-Belt Co. .....56 and 57
Lockwood, Greene & Co. ..76 & 77
Lombard Iron Works 389
Lovingood Co., The 534
Lowell Crayon Co. 387
Lunkenheimer Co. 15
Lupton's Sons Co., David 79

Manget Bros. Co. 372
Manufacturers Machine Co... 33
Manufacturing Equipment & Engineering Co. 325
Markem Machine Co. 35
Marshall Co., H. Newton 89
Mason & Co. Volney W. 327
Mason Machine Works 14
Mathews Gravity Carrier Co. .. 50
McGee, James Butler 358
McLeod Leather & Belting Co..400
Medart Mfg. Co., Fred 391
Memphis Chamber of Commerce 336
Memphis Terminal Corp. 339
Memphis F. O. B. Cotton Co. ..344
Merrow Machine Co. 548
Metz Co., H. A. 313
Mittell Cotton Co. 360
Monarch Theatre Supply Co. .. 47
Monroe Calculating Mch. Co... 45
Morehead Mfg. Co. ....70 and 71
Morse Chain Co. .....38 & 39
Myrtle Mills, Inc. 363

Nashville Industrial Corp. ..381
National Aniline & Chemical Co. 94
National Association of Box Manufacturers 48
National Bank of Commerce In New York 379
National Metal Molding Co...333
National Shawmut Bank 379
Newberger & Co., Silvan 353
Newman, Inc., H & C. 356
New York & N. J. Lub. Co. ..330
Newport Chemical Co. 524

Packard Motor Car Co. 55
Page & Co., F. L. 341
Palmer Co., E. I. 322
Parks-Cramer Co. 30
Patterson Sargent Co. 83
Pauls & Co., P. G. 346
Paulus, Chas. B. 556
Parkdale Mills, Inc 363
Pearson, Jos. T. 558
Peaslee-Gaulbert Co. ..... *
Perkins & Son, Inc., B. F. ..499
Permutit Co. 301
Phila. Drying Mchry. Co. 302
Pick & Co., Albert ....19 and 20
Piedmont Bonded Warehouse & Compress Co., Inc. 378
Portable Machinery Co. ..... *
Pouch Terminal, Inc. 49
Powers Regulator Co. 305
Proctor & Schwartz, Inc. 3, 4
Puro Sanitary Drinking Fountain Co. 323

Regnas, J. R. .....
Reliance Machine Works 556
Richards-Wilcox Mfg. Co. 326
Robbins & Sons, J. E. 380
Robert & Co. 329
Rock Glen Salt Co. 395
Roessler & Hasslacher Chemical Co. 532
Roy & Sons Co., B. S. 42
Rundle-Spence Mfg. Co. 324
Russell Mfg. Co. 530

Saco-Lowell Shops 21
Salem Iron Works 395
Sanitas Co. 385
Sanymetal Products Co. 85
Sargent's Sons Corp., C. G. ..304
Sayles Finishing Plates, Inc. ..317
Scaife & Sons, Wm. B. 391
Schaum & Uhlinger 298
Schofield Sons Co., J. S. 330
Schofield Co., Wm. 395
Scott & Co., Henry L. 528
Scott & Williams 543
Seaboard Air Line Ry. 383
Seawell, Luke 332
Service Recorder Co. ..... *
Sgitcovich & Co., Inc., S. 346
Shambow Shuttle Co. 538
Sherman Service, Inc. ..6 and 7
Sherwood Mfg. Co. ....64 and 65
Signode System, Inc. 326
Sirrine, J. E. 78
S K F Industries 59
Slaughter Machinery Co., G. G.395
Smith & Furbush Machine Co.. 22
Southern Bending Co. 32
Southern Brush & Broom Co...324
Southern Cotton Oil Co. ..... *
Southern Cypress Mfg. Asso. .. 75
Southern Distributing Co. 314
Southern Railway System 387
Southern Spindle & Flyer Co. 40
Southern Theatre Equip. Co. .. 44
Southern Welding Co. 380
Spiker & Lose 391
Strauss & Co. 360
Stafford Co. 25
Staley Mfg. Co., A. E. 309
Standard Conveyor Co. 53
Standard Fibre Co. 383
Standard Gas Products Co. ..332
Steel Heddle Mfg. Co. 322
Steele By-Products Co. 373
Stone Forwarding Corp. 345
Strachan Shipping Co. 359
Sturtevant Co., B. F. ..16 and 17
Surpass Chemical Co. 311
Swan & Finch 526
Taylor Co., Halsey W. 46
Taylor Instrument Co. 389
Terrell Machine Co. 37
Texas City Terminal Co. 350
Texas Co. 73
Textile Banking Co. 379
Textile Finishing Mchry. Co. .....536 and 398
Thomas Co., F. H. 324
Thompson & Co., W. B. 358
Thompson & Binger, Inc. 328
Tolar & Hart 367
Toledo Scale Co. 522
Tolhurst Machine Co. 300
Toomey, Frank, Inc. 381
Transmission Ball Bearing Co. 62
Tropical Paint & Oil Co. 330
Tufts Co., Arthur 504
Turner, J. Spencer 366

United Chemical Products Co...385
United Electric Co. ..... *
United Piece Dye Works 318
Universal Winding Co. 395
U. S. Ball Bearing Co. 60
U. S. Fuel Corp. 391

Valley Waste Mills ..508 and 509
Vogel Co., Jos. A. 325
Vonnegut Hardware Co. 86

Wadsworth, Howland & Co., Inc. 88
Wakefield & Co. 338
Walke Box Co., Inc. 295
Wall & Son, C. M. 387
Walraven Co., The 42
Walsh & Weidner Boiler Co. ..383
Want Ads 381
Warp Compressing Machine Co. 23
Warren Soap Mfg. Co. 517
Warwick-Aiken & Co. 340
Weatherford Crump & Co. 355
Weil Bros. 370
Weimar Bros. .....363 and 368
Wellington Sears & Co. 364
Westbrook Elevator Co., W. J. 327
Westinghouse Electric & Mfg. Co. ..... *
Westinghouse Lamp Co. ..... *
Whitinsville Spinning Ring Co. 11
Whitin Machine Works 28
Whiton Machine Co., D. E...320
Wildman Mfg. Co. 544
Williams & Sons, I. B. 58
Williamson & Rauers Co. 360
Wilson, Nabors & Pape, Inc. ..387
Wolf & Co., Jacques 318
Wolff & Co., A. L. 372
Wood's Sons Co., T. B. 61
Woodward Baldwin & Co. 366
Wright-Austin Co. 69
Zavon, Inc. 308

MAIN OFFICE AND WORKS
PROVIDENCE, R. I.

NEW YORK OFFICE
HUDSON TERMINAL BLDG.

THE TEXTILE-FINISHING MACHINERY CO

CANADIAN REPRESENTATIVES
WHITEHEAD, EMMONS LTD.
MONTREAL

SOUTHERN REPRESENTATIVE
H. G. MAYER
CHARLOTTE, N. C.

Your Inquiries Solicited for

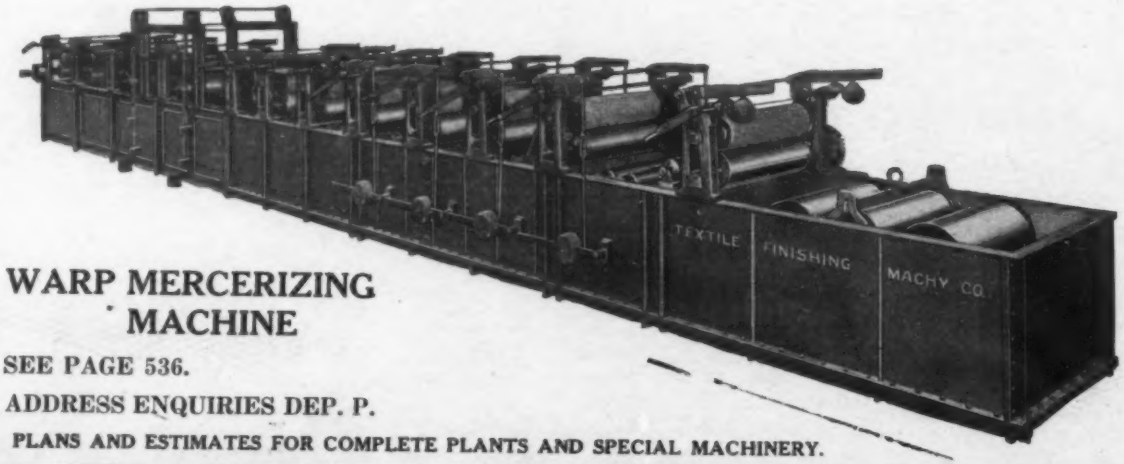
MACHINERY

of All Kinds and Types for Bleaching, Dyeing, Drying

Mercerizing and Finishing
Piece Goods and Warps

Our Specialties Are

Upright and Horizontal Dryers, Warp Mercerizing Machines, Singers, Kiers, Washers, Squeezers, Scutchers, Dye Jiggs, Mangles, Calenders, Tenters, Color and Size Kettles, Warp Dyeing Machinery, Elastic Web and Narrow fabric Finishing Machinery, and Calender Rolls for Cotton, Husk, Paper and Patent Combination Stock.



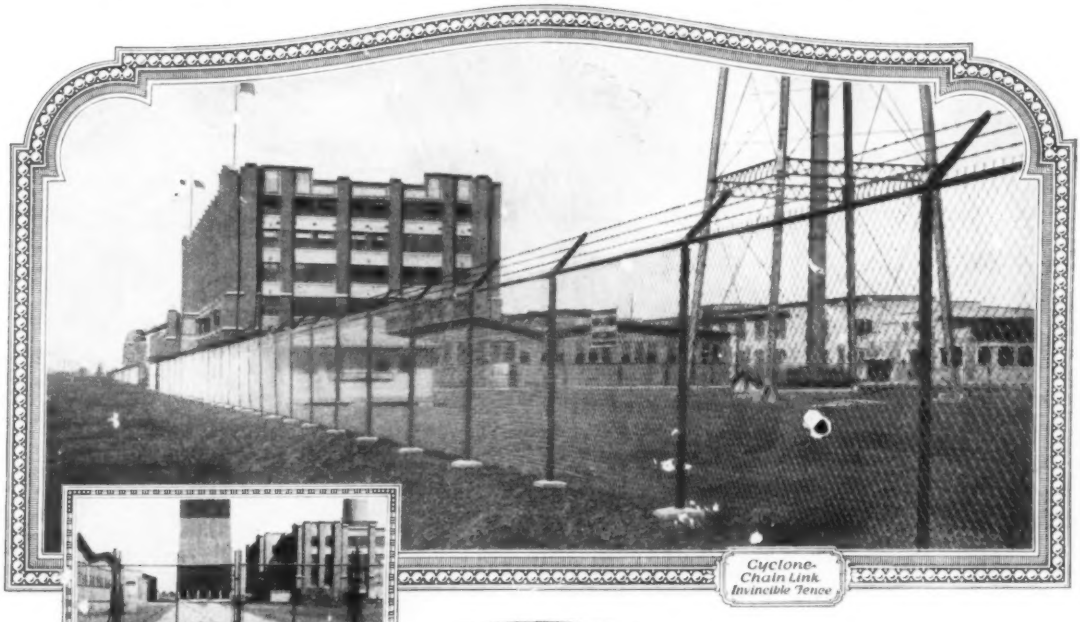
WARP MERCERIZING MACHINE

SEE PAGE 536.

ADDRESS ENQUIRIES DEP. P.

PLANS AND ESTIMATES FOR COMPLETE PLANTS AND SPECIAL MACHINERY.

CYCLONE FENCE



Cyclone-Chain Link Invincible Fence

Double Drive Gates used with Cyclone Chain Link Fence

Cyclone-Chain Link Non-Climbable Fence

Protects Property - Saves Dollars *for* Industrial Concerns Everywhere

Cyclone Fence has stopped the Leaks and Losses of open premises for thousands of the country's foremost manufacturers.

Today, Cyclone Fence is the standard of protection for industrial property of all kinds. Built of steel throughout, in a variety of patterns, it is practical, economical and permanent.

Heavy, steel frame work supports continuous stretches of Chain Link fabric. Posts are topped with steel extension arms which carry three or five rows of bristling, sharp-pointed steel barbs. This menacing combination of steel bids defiance to all would-be intruders—bars all outside dangers.

Decide now to install Cyclone Fence.

Without obligation to you, we will gladly submit a plan for fencing your factory property.
Phone, Wire or Write Main Offices, Waukegan, Ill., or Branch Offices nearest you.

CYCLONE FENCE COMPANY, Waukegan, Illinois

Factories: WAUKEGAN, ILL.; CLEVELAND, OHIO; FORT WORTH, TEXAS

Branch Offices:

Chicago, New York, Minneapolis, Baltimore, St. Paul, Kansas City, Indianapolis, Oakland, Detroit, Portland, Rochester, San Francisco, Philadelphia, Los Angeles

Look for the "Red Tag"

The Mark of Quality

Property Protection Pays

Mr. Mill Owner:

How would you like to sell your cotton at the high price for which it was bought and start out new buying cotton on the present low basis?

The McLeod Leather & Belting Co., Greensboro, N. C., have started with no high price material on hand, all new equipment, competent mechanics, a production manager who has spent his entire business career manufacturing belts for the cotton mills, a selling organization who know what your requirements are, and best of all a desire to serve you in such a manner that you will find it to your advantage to patronize them.

The Advantage is Obvious

McLeod Leather & Belting C..

W. T. McLEOD, *President*

Greensboro, N. C.

J. A. SCHACHNER, *Production Mgr.*